City of Columbus – Bartholomew County
Planning Department

123 Washington Street
Columbus, Indiana 47201
Phone: (812) 376-2550
Fax: (812) 376-2643

STAFF REPORT

CITY OF COLUMBUS PLAN COMMISSION
(December 9, 2015 Meeting)

Docket No. / Project Title:	MP-15-08 (Westwood 5th Replat)
Staff:	Allie Keen
Applicant:	Mark Pratt
Property Size:	6.73 Acres
Current Zoning:	PUD (Westwood Planned Unit Development)
Location:	Southeast corner of the intersection of State Road 46 and Westwood Boulevard, in the City of Columbus.

Background Summary:
The applicant has indicated that the proposed subdivision is for the purpose of creating one new lot consisting of 2 acres. The proposed new lot fronts State Road 46 which is classified as a principle arterial street by the Columbus Thoroughfare Plan. The Subdivision Control Ordinance requires the installation of any required sidewalks with the minor subdivision process. The sidewalk requirement for arterial streets is determined by the Plan Commission.

Also, the applicants are requesting a modification from Subdivision Control Ordinance Section 16.24.010(B)(1) to delay the requirement to install sidewalks along Westwood Boulevard, which is classified as a local street, until the property develops.

Key Issue Summary:
The following key issue(s) should be resolved through the consideration of this application:

1. Does the proposed modification to not install the required sidewalks along the Westwood Boulevard frontage meet the modification decision criteria?
2. Should sidewalks be required along the State Road 46 frontage as a part of the subdivision?
3. Should the existing “No Access” easement be removed along the Westwood Boulevard frontage of the new lot?

Preliminary Staff Recommendation:
Approval of the subdivision, subject to the “No Access” remaining as previously shown and without the requirement to install sidewalks along the State Road 46 frontage due to the topography and existing conditions along this frontage that make a sidewalk not feasible at this location.

Staff also recommends approval of the modification request to delay the sidewalk requirement along Westwood Boulevard until the lot is developed. This approval of the subdivision should be subject to the following condition: A note shall be added to the plat stating the following: A sidewalk meeting the applicable width, construction, and location standards of the Subdivision Control Ordinance shall be installed along the Westwood Boulevard frontage of Lot 6 at the time it is developed. Sidewalk construction along the Westwood Boulevard frontage of Block A-B shall be determined by the applicable regulations at the time of its platting and/or development.

Plan Commission Options:

In reviewing a request for *minor subdivision approval*, which includes a request for modification(s) the Plan Commission may (1) approve the modification(s) and the subdivision, (2) deny the modification(s) and the subdivision, or (3) continue the review to the next Plan Commission meeting. If more than one modification is requested, the Plan Commission may approve some, all, or none of the requests. The Plan Commission may attach conditions to the approval of the modification(s); however the conditions should be directly related to the circumstances of the modification requested. (Per Subdivision Control Ordinance Section 16.40.050)

Modification Decision Criteria:

Indiana law and Columbus Subdivision Control Ordinance Section 16.40.050 require that the Plan Commission approve all subdivisions which meet the applicable requirements. The Columbus Plan Commission has delegated the approval authority for Minor Subdivisions to the Plat Committee. This application is being considered by the Plan Commission because the Plat Committee found at least one aspect of the proposal to be inconsistent with the Subdivision Control Ordinance. Section 16.32.020 of the Subdivision Control Ordinance indicates that the Plan Commission may grant a modification of the requirements of the Ordinance upon the determination that each of the following is true:

1. The modification will not be detrimental to the public, health, safety, and general welfare.

2. Adjacent property will not be adversely affected.

3. The modification is justified because of exceptional topographic or other physical conditions unique to the property involved, as opposed to mere inconvenience or financial disadvantage.

4. The modification is consistent with the intent of the Zoning Ordinance, other applicable ordinances, and the Comprehensive Plan.

5. The modification will not conflict with the requirements of the Zoning Ordinance including but not limited to lot area, lot frontage, lot width, and setback(s).

Outstanding Technical Comments:

The following outstanding technical comments must be addressed by the applicant:

1. In the property description, “Block A1” should be labeled as “Block A-A” to be consistent with the previous plat.
2. In the site location map, please outline or label the entire Westwood subdivision.
3. The Chairman for Plan Commission is “Roger Lang” and the secretary is “David Fisher.”
4. There is nothing that addresses who utilizes/maintains the detention easement on the plat or in the owner’s certificate. This should be addressed on both this minor subdivision plat and the administrative plat (Case# AD-15-27).

Current Property Information (entire subdivision site):	
Land Use:	Vacant/Undeveloped
Site Features:	There are no significant site features at this location.
Flood Hazards:	There are no flood hazards at this location.
Special Circumstances: **(Airport Hazard Area, Wellfield Protection Area, etc.)**	There are no special circumstances at this location.

Vehicle Access:	This property can only gain access from Westwood Boulevard (Local, Commercial, Suburban). There is no access platted along the State Road 46 frontage and a portion of the Westwood Boulevard frontage.

Surrounding Zoning and Land Use (entire subdivision site):		
	Zoning:	**Land Use:**
North:	CR (Commercial: Regional)	Commercial (Westhill Shopping Center)
South:	PUD (Westwood Planned Unit Development)	Multi-Family (Westwood Pines Apartments)
East:	PUD (Woodcrest Planned Unit Development)	Two-Family Residential Office
West:	PUD (Westwood Planned Unit Development)	Retail (CVS Pharmacy) Office

Interdepartmental Review:	
City Engineering:	The "No Access" easement should remain as previously shown. If a drive is allowed in that area it will result in vehicles making turns across a thru lane and turn lane to access the property. Also, this drive may be blocked by the queue from the signalized intersection.
City Utilities:	No Comments.
Parks Department:	No Comments.
INDOT:	It appears this location has a guardrail the length of the frontage as well as turn lanes for the intersection in front of the property. With these two things in consideration we would not allow access onto State Road 46, so I am not sure why the no access should be removed.

History of this Location:

The relevant history of this property includes the following:

1. On October 5, 1994, the Columbus Plan Commission approved the Westwood Major Subdivision Preliminary Plat (PP-94-9). The preliminary plat consisted of 2 public streets and 3 blocks consisting of 39.27 acres. The three blocks were intended to be broken up into separate building lots in order to develop the property.
2. On August 27, 1997, a final plat (FP-97-9) for Westwood was approved and consisted of 4 lots and 3 blocks intended for future development. The subject property is Block A of this final plat.
3. On February 6, 2001, a minor subdivision (MP-01-02) was approved that created Lot 1B, where CVS is currently located.
4. On February 15, 2009, a minor subdivision (MP-08-01) was approved that created Lot 5A, where Residence Inn is located.

History of this Application:

The relevant history of this application includes the following: This application was reviewed by the Columbus Plat Committee at its November 19, 2015 meeting. The following comments are unresolved:

1. Plan Commission needs to make the determination whether sidewalks along State Road 46, which is a principle arterial street, should be required to be installed as a part of the subdivision request.
2. The applicants needed to either install the required sidewalks along the Westwood Boulevard frontage or request a modification to waive the sidewalk requirement.
3. The Plan Commission needs to determine whether the existing "No Access" easement should remain as it is or be removed along Westwood Boulevard.

Planning Consideration(s):

The following general site considerations, planning concepts, and other facts should be considered in the review of this application:

1. The applicant is proposing to create 1 new lot within the Westwood Major Subdivision that is 2 acres in size and located at the southeast corner of the intersection of State Road 46 and Westwood Boulevard.
2. The proposed lot has frontage along Westwood Boulevard which is identified as a local street. The Subdivision Control Ordinance requires a 5 foot wide sidewalk to be installed along this frontage as a part of the minor subdivision process, per Section 16.24.010(B)(1). The applicants are requesting to delay this requirement as a part of the subdivision process. They would instead prefer to install the sidewalk when the property is developed. Per Zoning Ordinance Section 7.3(Part 2)(A), all development in commercial zoning districts shall provide public sidewalks in all adjoining street and road rights-of-way.
3. Subdivision Control Ordinance Section 16.24.010(B)(1) also states that the sidewalk requirement along arterial streets shall be determined by the Plan Commission. The proposed lot also has frontage on State Road 46, which is identified as a principle arterial. Currently, there are no sidewalks along either the north or south sides of State Road 46 in this area until the Goeller Boulevard intersection where the People Trail begins on the north side of the street. Although a sidewalk connection between the Westwood Development and this People Trail is desirable along State Road 46, the existing topography would make it difficult to install a sidewalk.
4. Currently there is a platted "No Access" easement along the entire State Road 46 frontage and along approximately 105 feet of the Westwood Boulevard frontage of the subject property. This "No Access" notation was shown on both the Preliminary and Final Plats for Westwood. With the proposed plat, this "No Access" easement would limit the access to the new lot to approximately 84 feet along Westwood Boulevard. The applicants are proposing to remove the no access easement along Westwood Boulevard with the proposed plat in order to provide more flexibility when developing the new lot. It is at the Plan Commission's discretion as to whether or not the "No Access" easement can be removed because it was a part of the approved preliminary plat for Westwood. The City Engineering Department has recommended that the no access easement remain as it is currently platted for the purpose of preventing an access point close to the State Road 46 intersection. They have stating that if a driveway was permitted at this location it would result in vehicles accessing the property by crossing a thru lane and turn lane. Additionally Engineering stated the drive may become blocked by a queue from the signalized intersection.
5. In February of 2001, a minor subdivision was approved for the creation of Lot 1B, which is where CVS is currently located. On that final plat the original "No Access" easement was removed from the Westwood Boulevard frontage. The easement now only extends approximately 13.67 feet south on Westwood Boulevard. The Westwood PUD document does not specify a required separation distance for drives; therefore it is at the Plan Commission's discretion with the Final PUD approval for each lot. For comparison, the Zoning Ordinance requires a minimum of 100 feet of separation between two access points along a local street, per Section 7.3(Part 1)(C)(3)(c)(iii). CVS has two access drives from Westwood Boulevard. The northern drive is separated approximately 144.5 feet from State Road 46 and approximately 139 feet from the southern drive. When the proposed lot is developed, it is likely their access point/points will align with the existing CVS property.

Subdivision Control Ordinance Consideration(s):

The following provisions of the Subdivision Control Ordinance apply to the key issues of this application: Section 16.24.010(B)(1) Improvement of Existing Streets: Minor subdivisions shall be required to (1) dedicate right-of-way and (2) install any required sidewalks along the frontage of all new lots, with each consistent with the Thoroughfare Plan classification of adjacent streets and the specification of the City Engineer for arterial streets. The sidewalk requirement shall be determined by the Plan Commission for arterial streets.

E.R. Gray
& Associates
LAND SURVEYING

NOVEMBER 24, 2015

COLUMBUS / BARTHOLOMEW
PLANNING DEPARTMENT
JEFFREY R. BERGMAN, AICP
PLANNING DIRECTOR
123 WASHINGTON ST.
SUITE 8
COLUMBUS, INDIANA
47201

RE: REQUEST FOR MODIFICATION
WESTWOOD 5th REPLAT (MP-15-08)

PLEASE ACCEPT THIS LETTER AS A FORMAL REQUEST TO SEEK MODIFICATION, FROM THE CITY OF COLUMBUS SUBDIVISION CONTROL ORDINANCE, OF THE CITY OF COLUMBUS PLAN COMMISSION.

WE ARE REQUESTING PARTIAL RELIEF FROM THE REQUIREMENT OF SIDEWALK CONSTRUCTION AS DESCRIBED IN SECTION 16.24.010(B)(1); OF THE CITY OF COLUMBUS SUBDIVISION CONTROL ORDINANCE OF CURRENT ADOPTION. IT IS REQUESTED THAT THE SIDEWALK BE DESIGNED DURING THE SITE PLAN PROCESS AND CONSTRUCTED WHEN THE SITE IS DEVELOPED.
IF YOU HAVE ANY QUESTIONS OR NEED ADDITIONAL INFORMATION, PLEASE GIVE ME A CALL.

THANK YOU,

RIK L. SANDERS
SENIOR DIRECTOR, SURVEYS

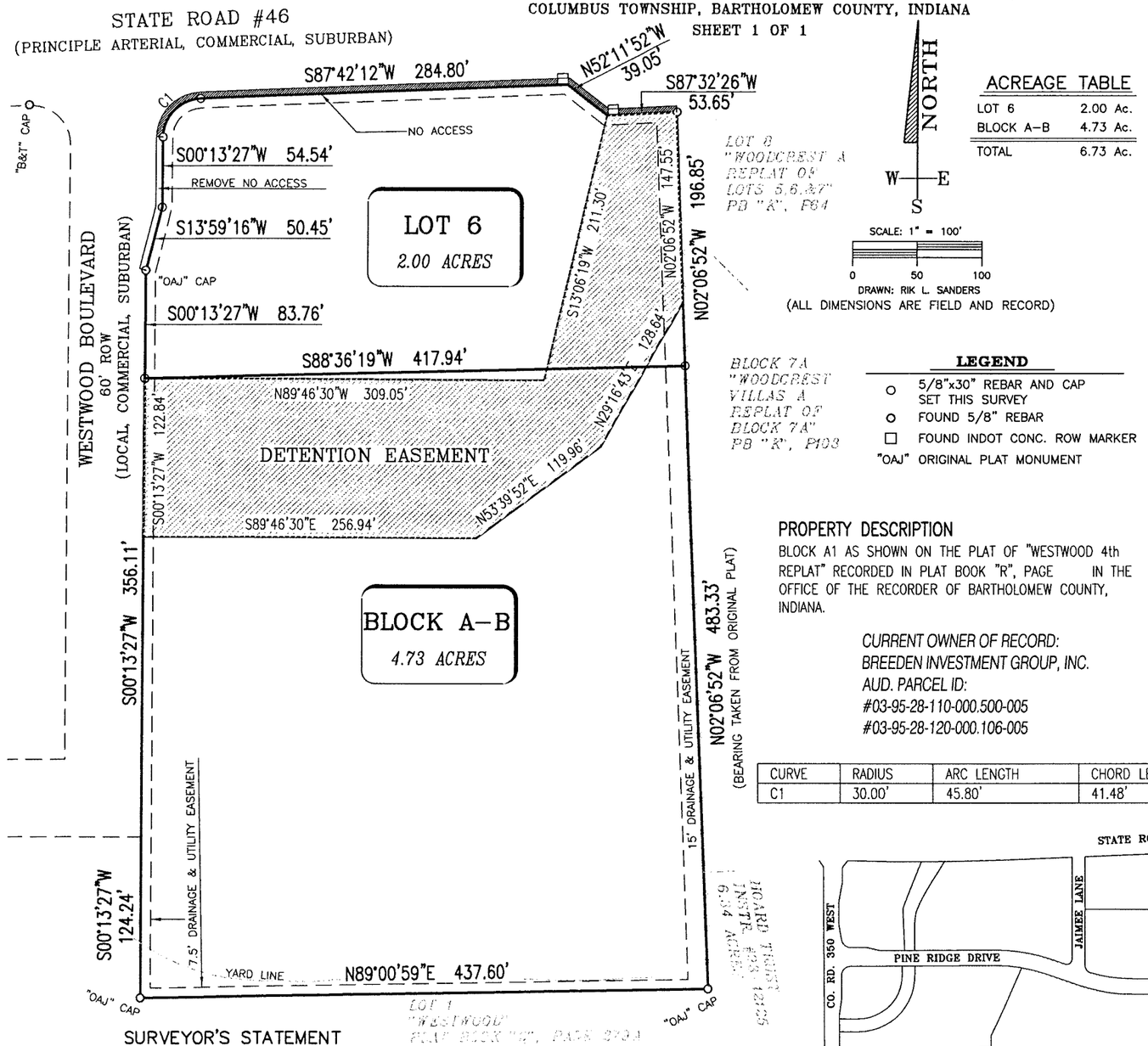
ERG JOB #15383

1428 Lafayette Ave. * P. O. Box 1357 * Columbus, IN 47202 * PH: (812) 372-7398 * FAX: (812) 372-2175

Westwood 5th Replat

A PART OF THE NORTHEAST QUARTER OF SECTION 28, TOWNSHIP 9 NORTH, RANGE 5 EAST
COLUMBUS TOWNSHIP, BARTHOLOMEW COUNTY, INDIANA

SHEET 1 OF 1



ACREAGE TABLE

LOT 6	2.00 Ac.
BLOCK A-B	4.73 Ac.
TOTAL	6.73 Ac.

LEGEND

- ○ 5/8"x30" REBAR AND CAP SET THIS SURVEY
- ○ FOUND 5/8" REBAR
- □ FOUND INDOT CONC. ROW MARKER

"OAJ" ORIGINAL PLAT MONUMENT

PROPERTY DESCRIPTION

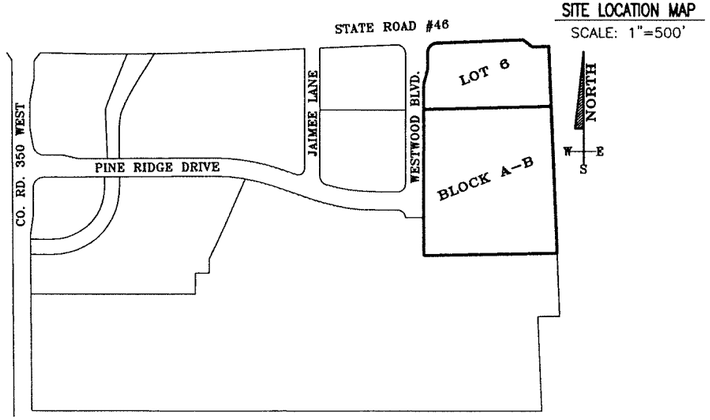
BLOCK A1 AS SHOWN ON THE PLAT OF "WESTWOOD 4th REPLAT" RECORDED IN PLAT BOOK "R", PAGE IN THE OFFICE OF THE RECORDER OF BARTHOLOMEW COUNTY, INDIANA.

CURRENT OWNER OF RECORD:
BREEDEN INVESTMENT GROUP, INC.
AUD. PARCEL ID:
#03-95-28-110-000.500-005
#03-95-28-120-000.106-005

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C1	30.00'	45.80'	41.48'	S43°57'49"W	87°28'17"	28.70'

SITE LOCATION MAP

SCALE: 1"=500'



SURVEYOR'S STATEMENT

I, ENOCH R. GRAY, III HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR, LICENSED IN COMPLIANCE WITH THE LAWS OF THE STATE OF INDIANA; THAT, TO THE BEST OF MY KNOWLEDGE, THIS PLAT CORRECTLY REPRESENTS A SURVEY COMPLETED BY ME IN NOVEMBER OF 2015; THAT ANY CHANGES FROM THE DESCRIPTION APPEARING ON THE LAST RECORD TRANSFER OF THE LAND CONTAINED IN THE FINAL PLAT ARE SO INDICATED; THAT ALL MONUMENTS SHOWN THEREON ACTUALLY EXIST OR WILL BE INSTALLED. I MAKE NO REPRESENTATION, EXPRESSED OR IMPLIED, AS TO THE SUITABILITY OF THIS REAL ESTATE FOR THE CONSTRUCTION OF BASEMENTS.

PRO-FORMA

NOVEMBER 24, 2015

ENOCH R. GRAY, III LS-0516 DATE

ENOCH R. GRAY III REGISTERED NO. S-0516 STATE OF INDIANA LAND SURVEYOR

I AFFIRM, UNDER THE PENALTIES FOR PERJURY, THAT I HAVE TAKEN REASONABLE CARE TO REDACT EACH SOCIAL SECURITY NUMBER IN THIS DOCUMENT, UNLESS REQUIRED BY LAW. ENOCH R. GRAY, III

OWNERS' CERTIFICATE

I THE UNDERSIGNED, MARK A. PRATT, PRESIDENT OF BREEDEN INVESTMENT GROUP, INC. OWNER OF THE REAL ESTATE SHOWN AND DESCRIBED HEREIN, DO HEREBY CERTIFY THAT WE HAVE LAID OFF, PLATTED AND SUBDIVIDED, AND DO HEREBY LAY OFF, PLAT AND SUBDIVIDE, SAID REAL ESTATE IN ACCORDANCE WITH THE WITHIN PLAT.

THIS SUBDIVISION SHALL BE KNOWN AND DESIGNATED AS "WESTWOOD 5th REPLAT" CONSISTING OF ONE LOT IDENTIFIED HEREON AS "LOT 6" AND ONE BLOCK IDENTIFIED HEREON AS "BLOCK A-B" AND CONTAINING IN ALL 6.73 ACRES.

CLEAR TITLE TO THE LAND CONTAINED IN THIS SUBDIVISION IS GUARANTEED.

THE SETBACK LINES SHALL BE DETERMINED BY THE REGULATIONS OF THE WESTWOOD PLANNED UNIT DEVELOPMENT.

THERE ARE STRIPS OF GROUND SHOWN ON THIS PLAT AND MARKED EASEMENT, RESERVED FOR THE USE OF PUBLIC UTILITIES AND SUBJECT TO THE PARAMOUNT RIGHT OF THE UTILITY OR CITY TO INSTALL, REPAIR, MAINTAIN OR REPLACE ITS INSTALLATION.

ALL DRAINAGE EASEMENTS IDENTIFIED ON THE PLAT ARE SPECIFICALLY AUTHORIZED TO BE USED FOR DRAINAGE PURPOSES. ALL GRADES SHALL BE MAINTAINED AS CONSTRUCTED. ADDITIONAL CUT AND FILL WORK WITHIN DRAINAGE EASEMENT AREAS IS PROHIBITED UNLESS AUTHORIZED BY THE ENGINEERING DEPARTMENT.

BLOCK A-A IN "WESTWOOD 4th REPLAT" IS HEREBY VACATED BY THIS PLAT.

LOT 6 AND BLOCK A-B ARE SUBJECT TO THE "DECLARATION OF COVENANTS AND CONDITIONS AND RESTRICTIONS" AS RECORDED IN "WESTWOOD 4th REPLAT".

WITNESS MY HAND AND SEAL THIS 5th DAY OF November 2015.

Mark A. Pratt

MARK A. PRATT, PRESIDENT OF BREEDEN INVESTMENT GROUP, INC.

BEFORE ME, THE UNDERSIGNED NOTARY PUBLIC, IN AND FOR THE COUNTY AND STATE, PERSONALLY APPEARED MARK A. PRATT, PRESIDENT OF BREEDEN INVESTMENT GROUP, INC. AND EACH SEPARATELY AND SEVERALLY ACKNOWLEDGED THE EXECUTION OF THE FOREGOING INSTRUMENT AS THEIR VOLUNTARY ACT AND DEED FOR THE PURPOSES THEREIN EXPRESSED.

WITNESS MY HAND AND NOTARIAL SEAL THIS 5th DAY OF November, 2015.

Mary R. Lloyd
NOTARY PUBLIC MARY R. LLOYD

Bartholomew
COUNTY OF RESIDENCE

5.1.21
MY COMMISSION EXPIRES

NOTARY PUBLIC SEAL INDIANA

PRIMARY APPROVAL

UNDER AUTHORITY PROVIDED BY IC 36-7-4-700, SUBDIVISION CONTROL, AND ANY AMENDMENTS THERETO. THIS PLAT WAS GIVEN PRIMARY APPROVAL BY THE CITY OF COLUMBUS, INDIANA AS FOLLOWS: APPROVED BY THE CITY PLAN COMMISSION AT A MEETING HELD DECEMBER 09, 2015

CHAIRMAN -

SECRETARY -

VOID UNLESS SECONDARY APPROVAL IS RECEIVED BY:

_____, 20____.

SECONDARY APPROVAL

ALL CONDITIONS OF PRIMARY APPROVAL HAVE BEEN MET AND THIS PLAT IS GRANTED SECONDARY APPROVAL. APPROVED BY THE PLANNING

DEPARTMENT _____, 20_____.

JEFFREY R. BERGMAN, AICP, PLANNING DIRECTOR

VOID UNLESS RECORDED BY _____, 20____

AUDITOR'S CERTIFICATE

THE REAL PROPERTY HAS BEEN DULY ENTERED FOR TAXATION AND TRANSFERRED ON THE RECORDS OF THE AUDITOR OF BARTHOLOMEW COUNTY,

THIS _____ DAY OF _____, 2015.

BARBARA J. HACKMAN, BARTHOLOMEW COUNTY AUDITOR

RECORDING CERTIFICATE

RECORDED IN PLAT BOOK "R", PAGE _____, THIS _____ DAY

OF _____, 2015 AT _____ O'CLOCK ____.M.

INSTRUMENT NO. _____. FEE PAID _____.

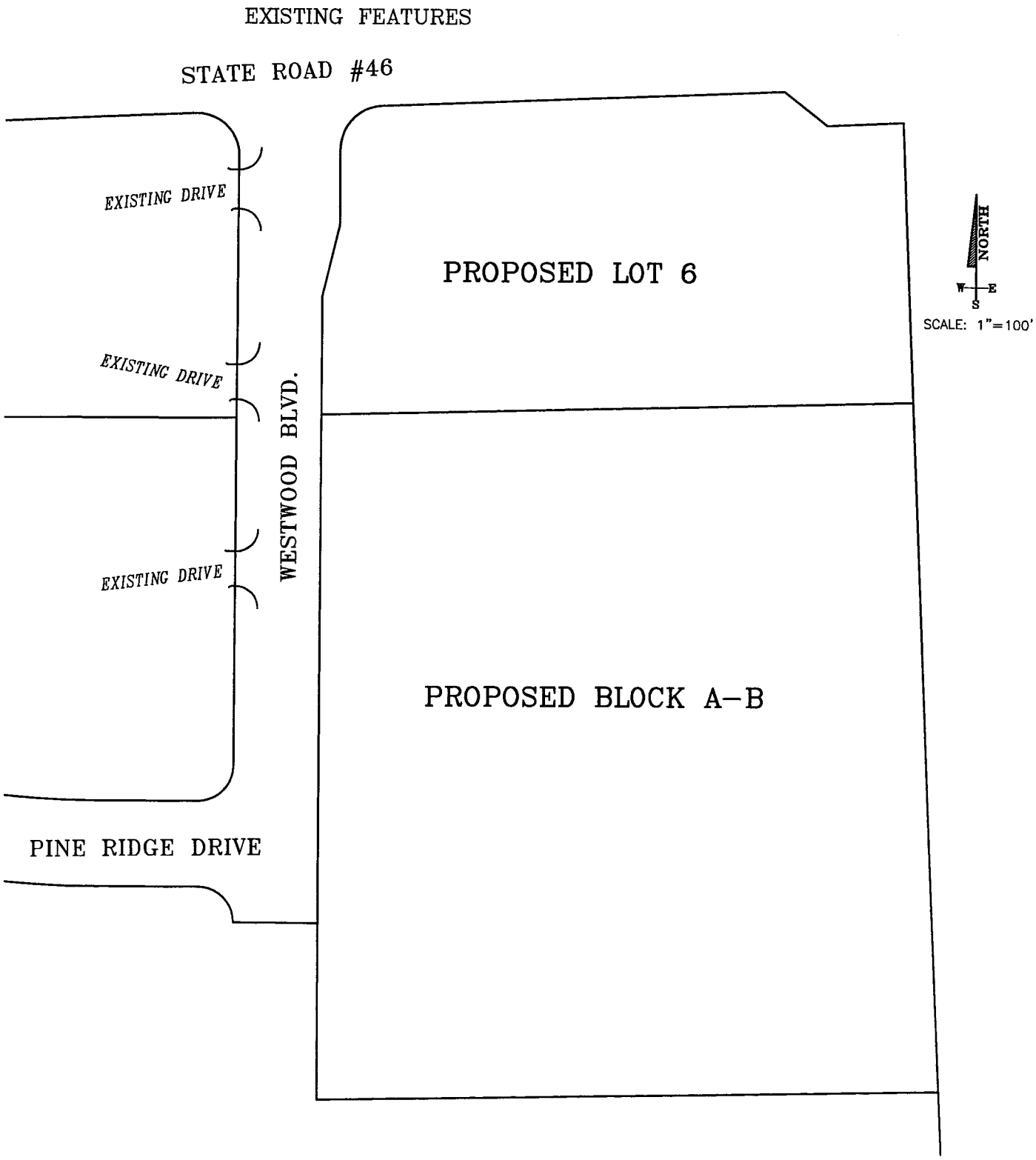
ANITA L. HOLE, BARTHOLOMEW COUNTY RECORDER

A NOTATION HAS BEEN MADE ON THE ORIGINAL PLAT OF "WESTWOOD 3rd REPLAT" RECORDED IN PLAT BOOK "R", PAGE

SURVEYOR'S REPORT RECORDED IN _____

JOB #15383

E.R. GRAY & ASSOCIATES
PROFESSIONAL LAND SURVEYING AND CONSULTING
E.R. GRAY III, L.S.
PRESIDENT
P.O. BOX 1357
COLUMBUS, INDIANA 47202
BUS. 812-372-7398 FAX 812-372-2175


EXISTING FEATURES
STATE ROAD #46
EXISTING DRIVE
EXISTING DRIVE
EXISTING DRIVE
WESTWOOD BLVD.
PROPOSED LOT 6
PROPOSED BLOCK A-B
PINE RIDGE DRIVE
NORTH
W
E
S
SCALE: 1"=100'

INFRASTRUCTURE ENGINEERING | INCORPORATED

TRAFFIC IMPACT STUDY

For

Proposed Ricker Oil Company Development

Columbus, Indiana

Prepared For:

Ricker Oil Company

And

The City of Columbus, Indiana

Prepared By:

Infrastructure Engineering, Inc.

2601 Fortune Circle East, Suite 202B

Indianapolis, Indiana 46241

February 5, 2016

Traffic Impact Study

For

Proposed Ricker's Development

Columbus, Indiana

I certify that this Traffic Impact Study has been prepared by me or under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering.

Dustin T. Quincy, P.E.

Jane Canada, E.I.

INFRASTRUCTURE ENGINEERING | INCORPORATED

Table of Contents

List of Figures

List of Tables

Executive Summary

Study Purpose

This traffic impact study (TIS) is meant to assess the level of service (LOS) impacts caused by the Ricker's gas station and convenience store proposed for the southeast quadrant of the intersection of SR 46 (Johnathan Moore Pike) and Westwood Boulevard, to the south, and County Road North 325 West, to the north in Columbus, Indiana (Figure 1). This study is also meant to provide recommendations for any necessary improvements required to maintain an acceptable level of service on existing Westwood Boulevard. These recommendations are based on both opening day 2016 traffic volumes and projected traffic volumes in the year 2036. This executive summary is meant to provide an overview of the following detailed report. For traffic collection approach, analysis methodology and additional site related details proceed to the body of the report.

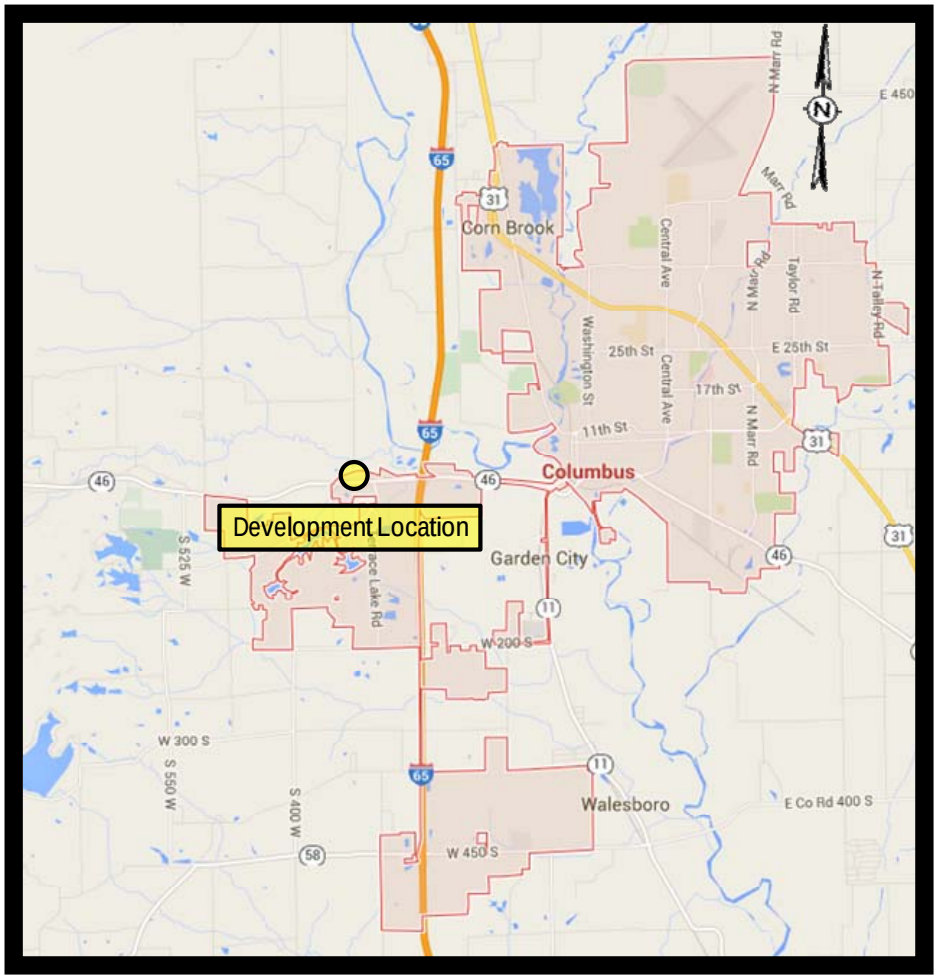


Figure 1 – Study Location

Study Scope Summary

This study focuses on the intersection of SR 46 and Westwood Boulevard to the south and County Road North 325 West to the north. Adjacent intersections along SR 46 are currently functioning at a high levels of service and therefore will not be analyzed as part of this report.

In order to analyze the effects of the Ricker's site on the SR 46 and Westwood Blvd and N 325 W at this intersection, 4 scenarios were examined:

- *Scenario 1* – Year 2016 existing AM and PM peak hour traffic without the Ricker's development.
- *Scenario 2* – Year 2016 existing AM and PM peak hour traffic with the proposed Ricker's development.
- *Scenario 3* – Year 2036 future AM and PM peak hour traffic without the Ricker's development.
- *Scenario 4* – Year 2036 future AM and PM peak hour traffic with the proposed Ricker's development.

These scenarios show the effects of the proposed Ricker's on both opening day in 2016 and its forecasted effects in year 2036. Recommendations for improvements which will maintain an acceptable level of service for the aforementioned intersection are derived from the analysis of these situations. It must be noted that these are only recommendations and no design plans or specifications regarding the improvements are provided with this report.

Proposed Development Summary

The proposed site is a Ricker's gas station which contains 16 passenger vehicle pumps and a convenience store. The resulting property size will be 2.08 acres when development is complete. The location and overall layout of this proposed Ricker's gas station and convenience store can be seen in Figure 2.

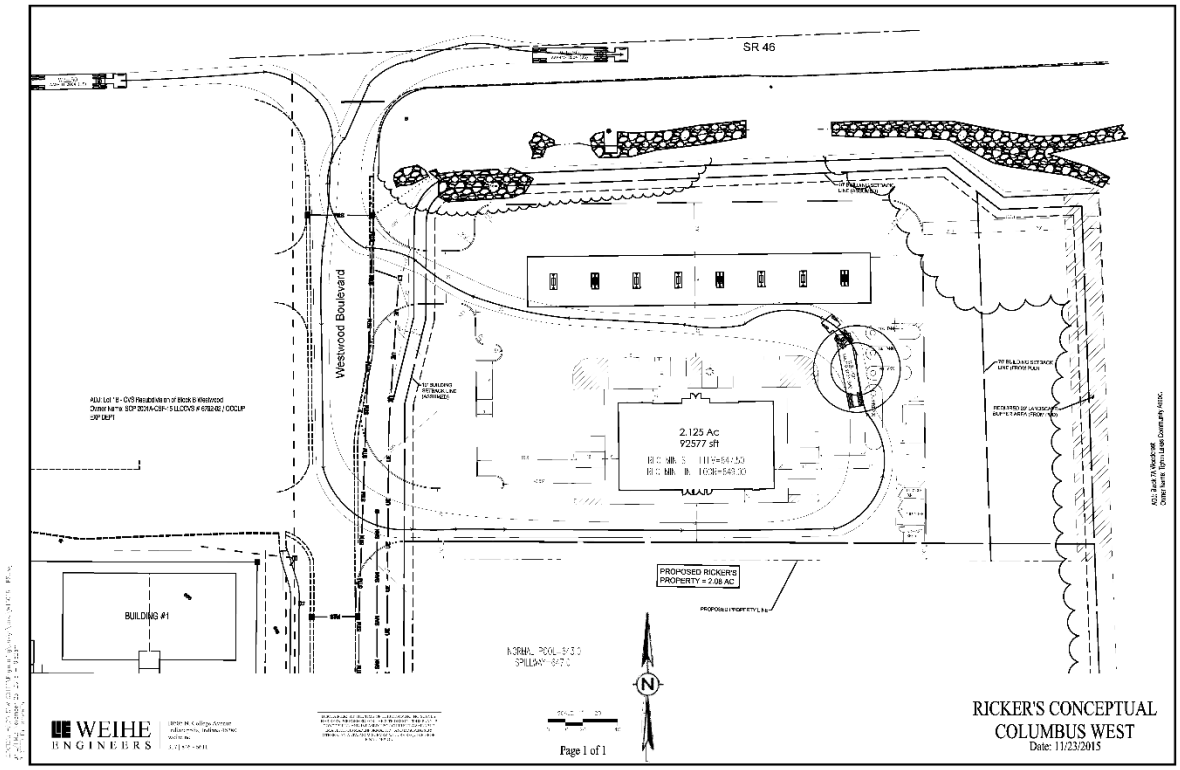


Figure 2 – Proposed Development Layout

Traffic Summary

2014 Average Annual Daily Traffic (AADT) volumes for the SR 46 were obtained through INDOT's Traffic Count Database System (TSDS) and then projected to 2016 using the 2014 annual growth rate. This AADT was used with approval from the City of Columbus Engineering Department. 48 hour counts for Westwood Boulevard and N 325 W and were collected by Infrastructure Engineering, Inc. (IEI) using mechanical counters from the evening of Tuesday, January 26, 2016 to the morning of Friday, January 29, 2016. Turning movements for all approaches were collected by IEI during the AM peak hours of 6am to 8am on January 28, 2016 and for the PM peak hours of 4pm to 6pm on January 26, 2016. Forecasted 2036 volumes were projected using a growth rate of 1% which was provided to IEI by the City of Columbus's engineering department. The trips generated by the proposed Ricker's site were calculated using the appropriate tables, plots and equations found in the Institute of Transportation Engineers' *Trip Generation Manual, 9th Edition.*

Findings and Recommendations Summary

After completing the analysis of the study intersection it was found that the Ricker's development will have little impact on the level of service for SR 46, Westwood Boulevard and N 325 W. The existing turn lanes on all approaches have adequate storage capacity and the signal timing does not need to be adjusted for this development.

Background Information

Project Scope and Purpose

This traffic impact study (TIS) is meant to assess the level of service (LOS) impacts caused by the Ricker's gas station and convenience store proposed for the southeast quadrant of the intersection of SR 46 (Johnathan Moore Pike) and Westwood Boulevard, to the south, and County Road North 325 West, to the north in Columbus, Indiana (Figure 1). By analyzing the intersection of Westwood Boulevard/N 325 W and SR 46 using both the existing 2016 traffic volumes and the projected 2036 volumes a reasonable conclusion can be made regarding the effects of this development. This study will also make recommendations as to whether or not geometric or signal improvements need to be made to maintain an acceptable level of service at this intersection.

Existing Roadway Conditions within Study Area

The intersection being studied is that of SR 46 and Westwood Boulevard/County Road North 325 West. SR 46 runs east and west on the northern edge of the proposed site with a speed limit of 45 mph. East of the intersection, SR 46 consists of one westbound thru lane with one dedicated left turn lane and one dedicated right turn lane. The east side of SR 46 also has two eastbound thru lanes and a two foot raised median separating the east and west bound lanes. West of the intersection SR 46 consists of one westbound thru lane and two eastbound thru lanes. The west side of SR 46 also contains one dedicated left turn lane and one dedicated right turn lane. There is no raised median west of the intersection.

Westwood Boulevard runs north and south along the west edge of the proposed site with a speed limit of 30 mph. Westwood Boulevard is a curbed two lane road. The northbound through lane becomes the dedicated left turn lane. The thru and right turn lane is an auxiliary lane with 145 feet of storage with a 50 foot taper. North of the intersection Westwood Boulevard becomes Country Road North 325 West and has a 45 mph speed limit. N 325 W is a two lane uncurbed road with a dedicated right turn lane. This intersection is currently signalized with no dedicated phasing for turning movements. The intersection is currently functioning an overall A Level of Service in the AM peak hour and a B LOS for the PM peak hour. Figure 3 shows the 2016 turning movements without the proposed Ricker's gas station and convenience store.

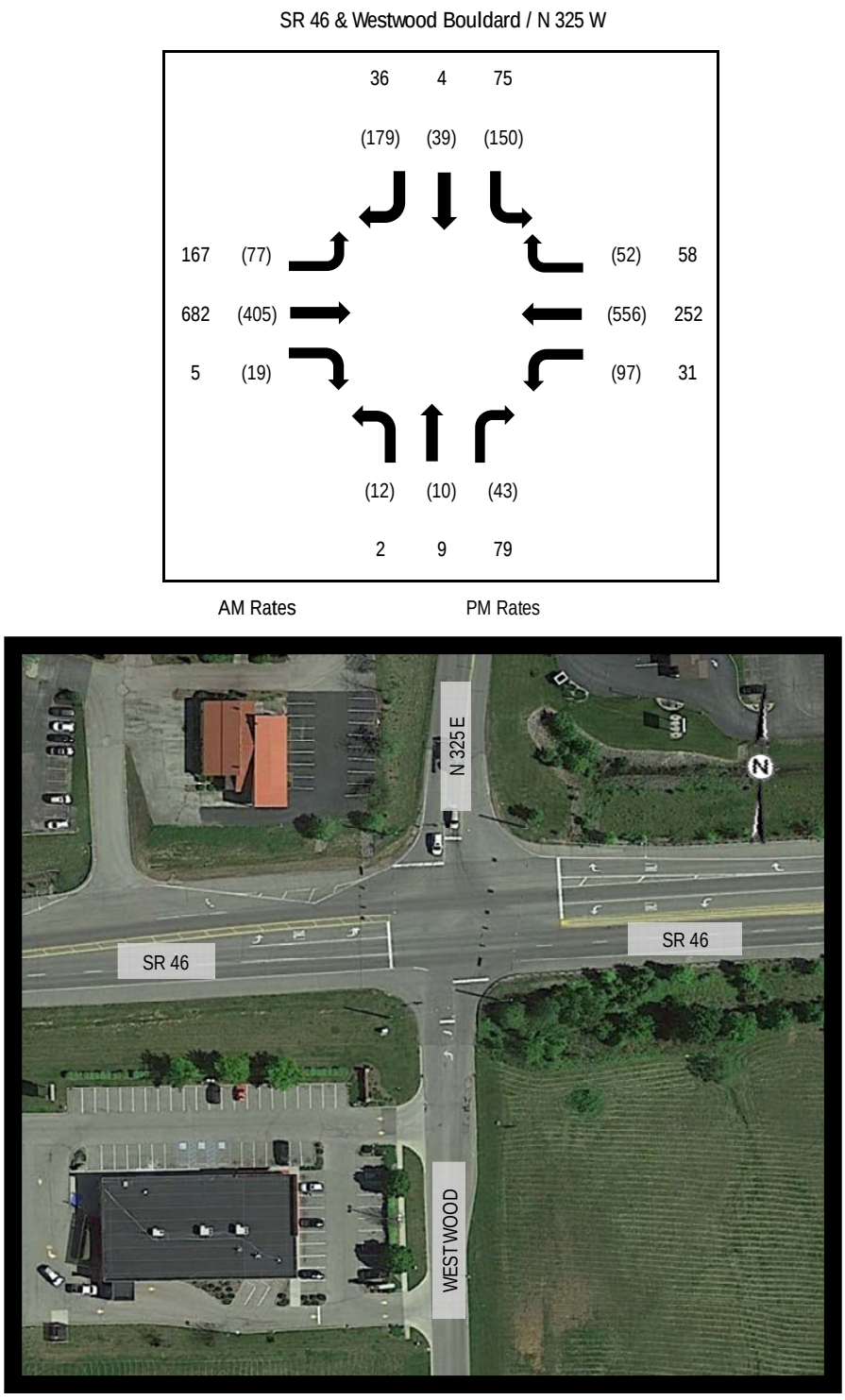


Figure 3 - 2016 Traffic Turning Movements and Flow Rates without Ricker's Development

Existing Land Use within Study Area

The existing site is a vacant, grassy area. The current property size is 2.125 acres. There is no existing access to the property via state, city or privately maintained roadways.

Directly across from the proposed site is an existing CVS Pharmacy. South of the CVS there is a new commercial development under construction. Less than 1000 feet south of the proposed Ricker's is a large apartment complex called Westwood Pines. Westwood Boulevard dead-ends into the entrance of this apartment complex and tees with Pine Ridge Drive which continues to the west.

In the northeast quadrant of the intersection of SR 46 and Westwood Boulevard/N325W there is a large development that holds a grocery store, fast-food restaurants, retail space and two banks. In the northwest quadrant of the intersection there is a small veterinary clinic and currently abandoned office buildings. Beyond these developments, the area north of the intersection is largely rural which a few scattered residences.

Proposed Development Description

The proposed site is a Ricker's gas station and convenience store which contains 16 passenger vehicle pumps and a convenience store. The resulting property size will be 2.08 acres when development is complete. There are two entrance/egress drives located on the east side of Westwood Boulevard. Both drive access points to the site line up directly with the access drives to the CVS. The first entrance/egress drive is located less than 100 feet south of the existing signalized intersection of Westwood Boulevard and SR 46. The location and overall layout of this proposed Ricker's gas station and convenience store can be seen in Figure 2.

Between the proposed Ricker's development and Westwood Pines there are several acres that could be developed by a third party, as well as the commercial development currently under construction south of CVS. This study will not take into account the future traffic that may be generated by the future development of these parcels.

Traffic Forecasting

Traffic Data and Collection Methods

2014 Average Annual Daily Traffic (AADT) volumes for the SR 46 were obtained through INDOT's Traffic Count Database System (TSDS) and then projected to 2016 using the INDOT forecated 2014 annual growth rates. For the east bound positive lanes the growth factor is 2% and for the west bound lanes the growth factor is -11%. This AADT was used with approval from the City of Columbus Engineering Department. 48 hour counts for Westwood Boulevard and N 325 W and were collected by IEI using mechanical counters from the evening of January 26, 2016 to the morning of January 29, 2016. Turning

movements for all approaches were collected by IEI during the AM peak hours of 6am to 10am on January 28, 2016 and for the PM peak hours of 4pm to 6pm on January 26, 2016. The Jamar Technologies, Inc. Trax Apollyon was used to collect the mechanical counts and the TDC Ultra Traffic Collector was used to get the turning movements. The trips generated by the proposed Ricker's site were calculated using the appropriate tables, plots and equations located in the Institute of Transportation Engineers' *Trip Generation Manual, 9th Edition.* See appendix A, B and C for all collected traffic data.

Trip Generation Methodology

The primary reference document used to forecast the trip generation caused by the Ricker's site was the *Trip Generation Manual: 9th Edition*. This document takes past traffic studies conducted around the United States and Canada, classifies the studies by their specific land use, and then creates statistical tables, equations and plots that allow designers to better predict the trips that a similar site will generate. The statistical data derived from these past traffic studies is utilized by designers through independent variables associated with a particular land use. These independent variables are physically measureable features of a site and can be reasonably correlated to the use of the site. For example, the square footage of a retail clothing store is an independent variable which can be correlated to the amount of customers it attracts and the amount of trips it generates, likewise so are the number or units in an apartment complex. Some land uses may have two or more independent variables that could be reasonably correlated to the number of trips generated. In a case like this the designer must choose the most reasonable independent variable that best forecasts the trips generated by the site.

For this site's particular land use, Gasoline/Service Station with Convenience Market (945), there are two possible independent variables: the convenience store's gross floor area or the number of vehicle fueling positions. In this case, the number of fueling positions was determined to be the more appropriate independent variable because it is the most causal reason for drivers to enter the proposed site. A number of factors contributed to this determination, including:

- *Proximity to the SR 46 and the IR 65 Interstate interchange* – The proposed Ricker's station is the only service station located west of the IR 65 to SR 46 interchange. Therefore, it will divert cars from the interstate and SR 46 for its service pumps rather than its convenience store items.
- *Proximity to a CVS Pharmacy location* – It is reasonable to assume that most trips diverted to the new Ricker's location will be caused by the service pumps because they will have a choice to purchase similar convenience store items directly across the street at CVS.

Forecasting the number of trips generated by the site simply consists of multiplying the number of service pumps by the average rate listed in the tables found on pages 1995 and 1996 of the *Trip Generation Manual: 9th Edition.* The peak AM hour rate of 10.56 trips per pump was used generating approximately 170 trips into and out of the proposed Ricker's. The PM rate of 13.56 trips per pump was used generating approximately 218 trips into and out of the proposed site. Figure 4 and Figure 5 show the final 2016 opening day generated trips for the site.

Diverted Linked Trip Generation Methodology

Diverted linked trips are trips to the site which do not originate on, or continue along the adjacent roadway. Diverted linked trips for this site are defined as those trips traveling along SR 46 which stop at the site and then continue their primary trip along SR 46 rather than continuing along the site's adjacent roadway, Westwood Blvd/ N 325 W. These trips do add volume to the adjacent roadway because vehicles that would not otherwise be there are utilizing Westwood Boulevard to access the Ricker's site.

The diverted linked trip percentage is derived by utilizing Table 5.29 and 5.30 in the *Trip Generation Manual* which shows diverted link trip survey data on 9 different gas stations classified as #945. By averaging the data in these tables a diverted link trip percentage of 21% is generated for the AM and 31% for the PM hours. Figure 4 and Figure 5 show the 2016 opening day diverted linked trips for this site.

Pass-By Trip Generation Methodology

Pass-by trips are trips to the site which originate from an adjacent roadway and then continue along that same adjacent roadway. These trips are not the driver's final destination but an intermediate stop. In this study, pass-by trips are defined as those trips traveling along Westwood Blvd/ N 325 W which stop at the site and then continue along Westwood Blvd/ N 325 W or SR 46 to their primary destination or vice versa. These trips do not add volume to Westwood Boulevard or SR 46 as they would have already been traveling these roads regardless of the presents of the Ricker's site.

For this site the AM percentage pass-by trips is 62% of the total AM trips generated and the PM percentage used is 56% of the total PM trips generated. These percentages were derived by utilizing Table 5.29 and 5.30 in the *Trip Generation Manual*. Figure 4 and Figure 5 show the 2016 opening day pass-by trips for this site.

Primary Trip Generation Methodology

Primary Trips are trips generated by the site that which originate on the adjacent roadway and have the sole purposed of going to the site and returning to their point of origin. This study defines primary trips as those started and completed on Westwood Boulevard or N 325 W only.

The percentage of primary trips is derived by simply finding the remaining percentage of total trips not classified as diverted link or pass-by. In this case the AM percentage primary trips is 17% and the PM percentage primary trips is 13%. Figure 4 and Figure 5 show the 2016 opening day primary trips for this site.

Trip Distribution Methodology

Trip Distribution describes from which direction each trip to the site enters and exits. Each type of trip has its own trip distribution that best describes how that trip type functions in the adjacent roadway network. In this study it was determined that 90% of the primary trips to the site will enter headed northbound and exit headed southbound at AM and PM peak hours. This percentage trip distribution was chosen to reflect the draw the new Ricker's will have on motorists living in the existing apartment complex and hotel to the south of the site. The apartment complex and hotels is also why it was determined that 90% of pass-by trips will enter and exit heading northbound on Westwood Boulevard in the AM and 90% will enter and exit heading southbound in the PM peak hour. This trip distribution reflects the direction distribution found at the peak hours for trips originating at the apartment complex. Finally, diverted linked trips to the site were determined to have 98% entering traveling southbound on Westwood Boulevard and then exiting northbound at AM and PM peak hours. This percentage is reasonable because SR 46 is the closest and most heavily traveled roadway that can have traffic diverted from it in the context of this study. All final trip distributions for all trip types can be seen in Figures 4 and 5.

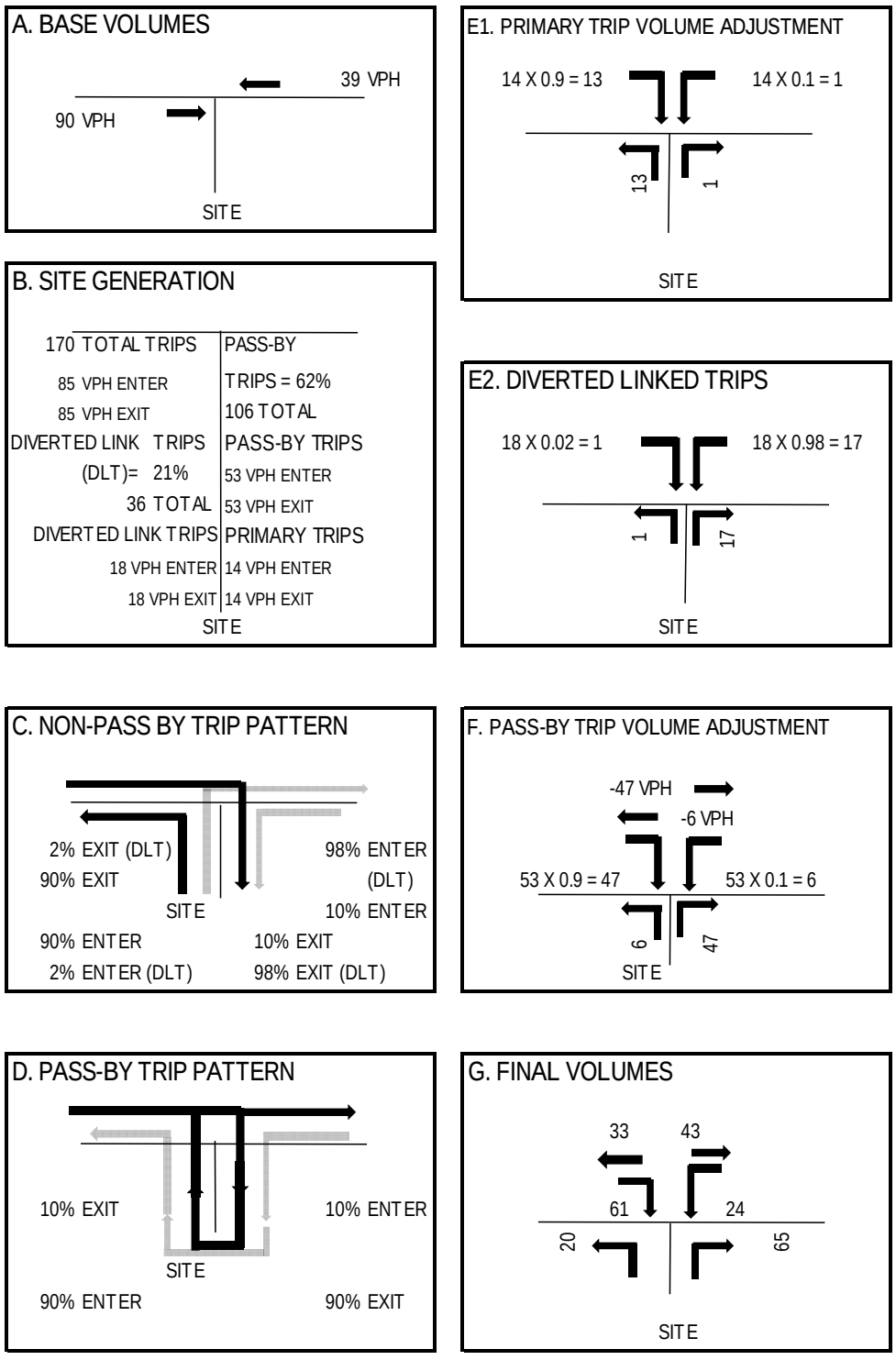


Figure 4 –2016 A.M. Traffic: Diverted Linked Trips, Primary Trips and Pass-By Trips with Ricker's Development

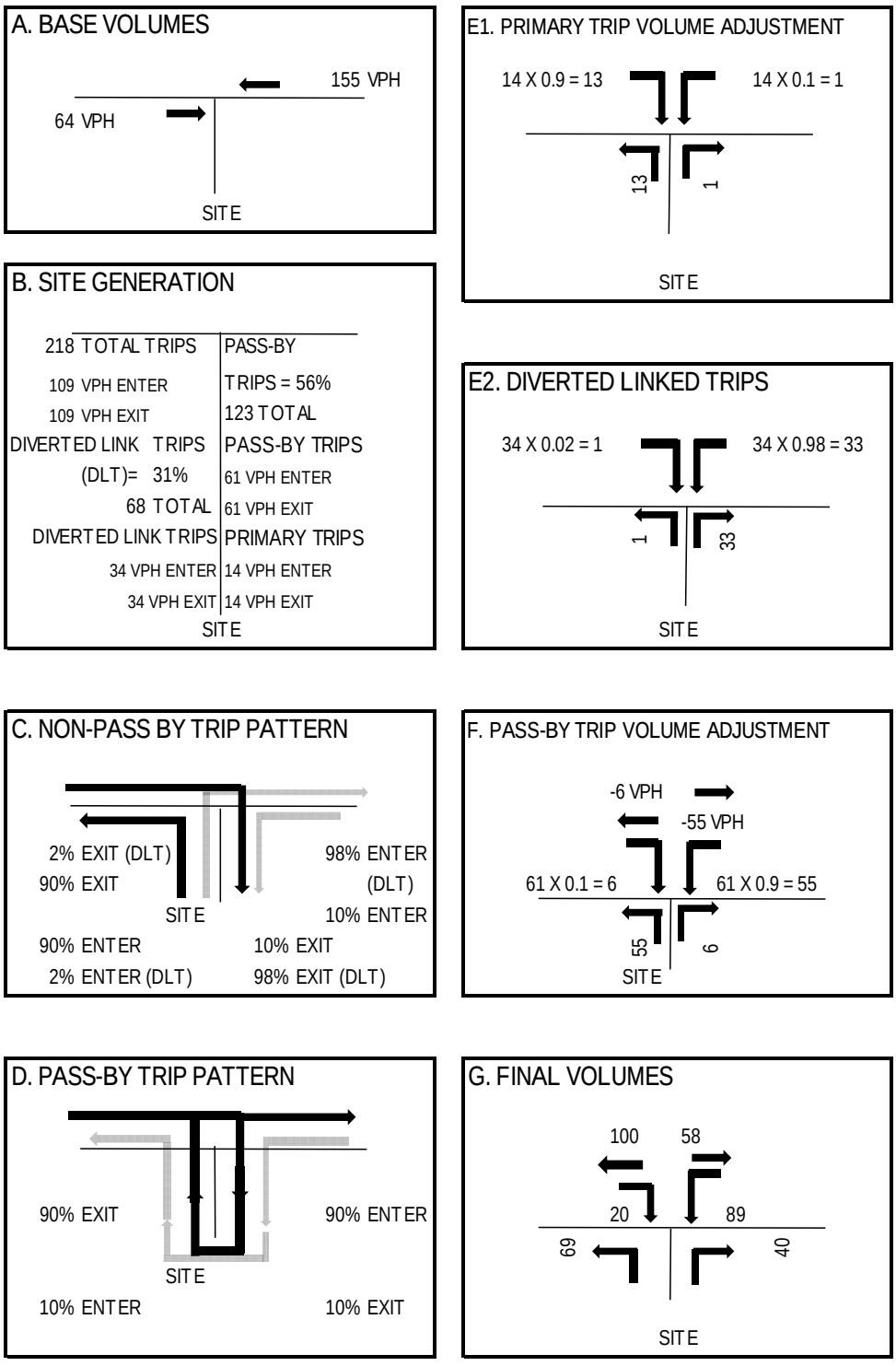


Figure 5 –2016 P.M. Traffic: Diverted Linked Trips, Primary Trips and Pass-By Trips with Ricker's Development

Resulting Forecasted 2036 Traffic Volumes

The opening day traffic counts used for this report were projected to the 2036 traffic volumes by using a growth factor of 1%. This growth factor was recommended by the City of Columbus Engineering Department.

From 2016 to 2036 there will be no increase in the trips generated to the site itself. This is due to the overall methodology used to predict the trips generated by the site. The *Trip Generation Manual*'s use of independent variables causes the generated trips to be based only on the site's individual characteristics and not the surrounding traffic volume. Therefore the trips used on opening day 2016 and those in 2036 will be the same because both scenarios assume the Ricker's independent variables are constant and therefore the trips generated as well. The diverted linked trips percentage, pass-by percentage and trip distribution percentages were assumed to remain the same. The future 2036 trip generation information for the site can be seen in Figure 6 and Figure 7.

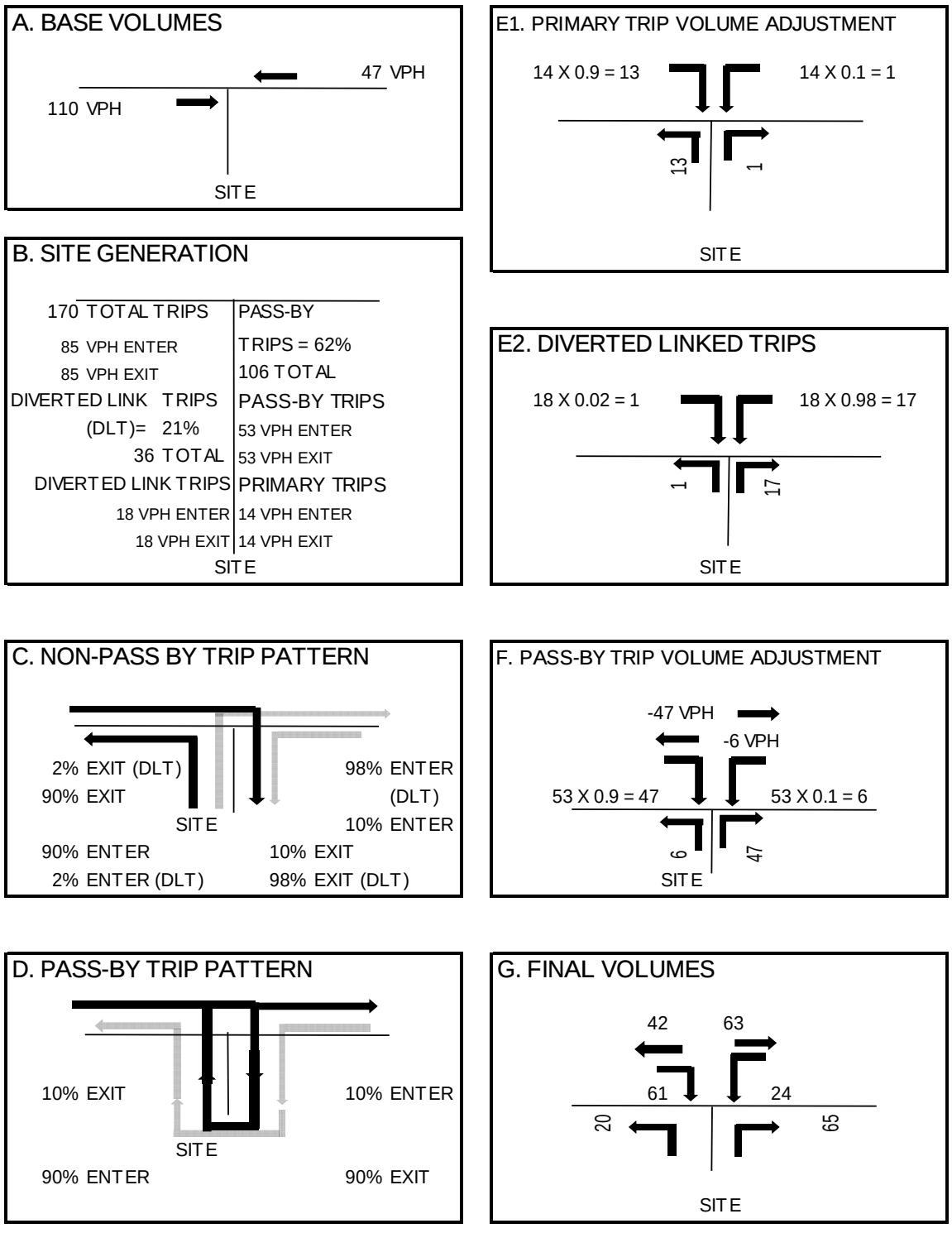


Figure 6 –2036 A.M. Traffic: Diverted Linked Trips, Primary Trips and Pass-By Trips with Ricker's Development

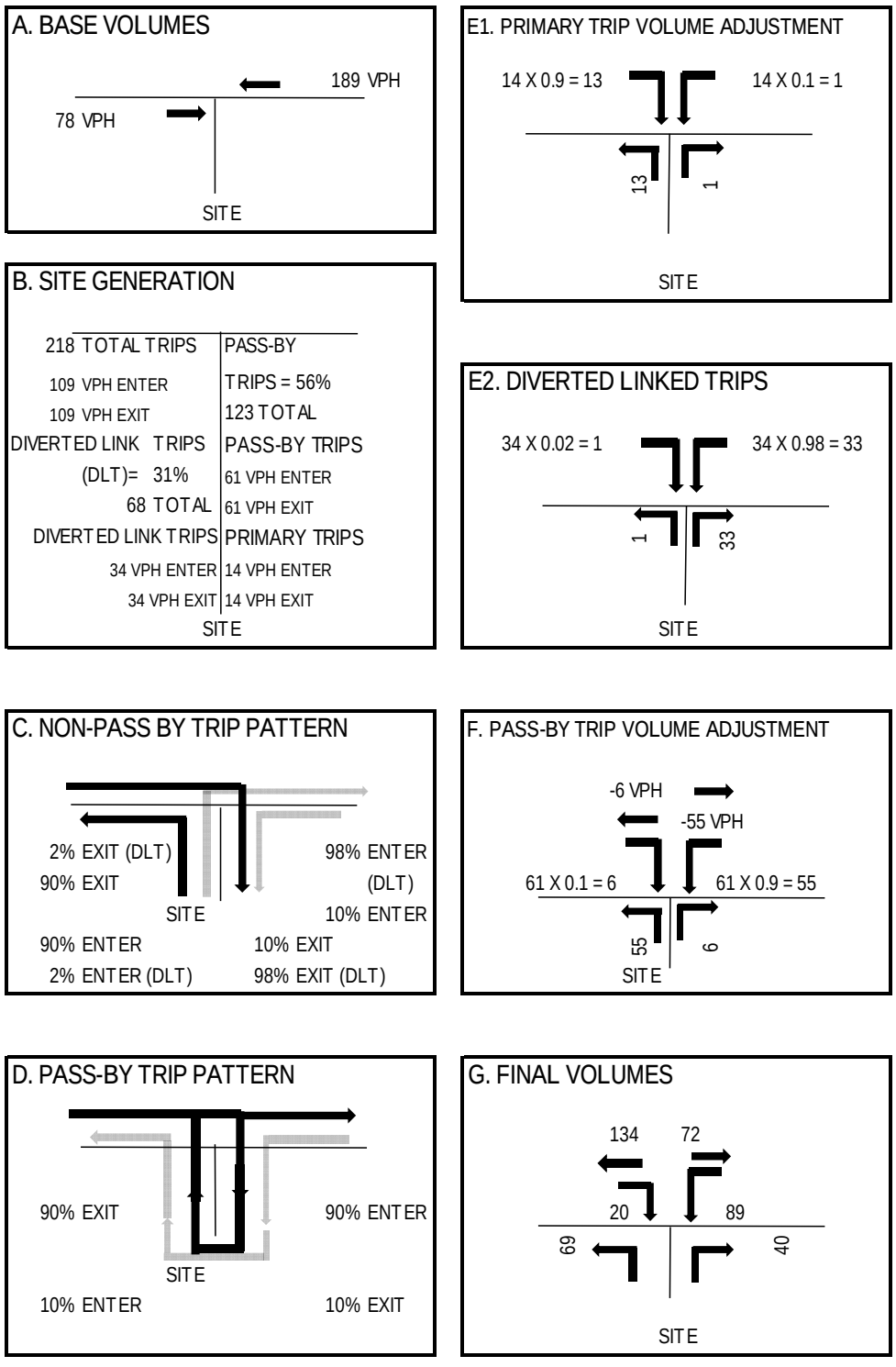


Figure 7 –2036 P.M. Traffic: Diverted Linked Trips, Primary Trips and Pass-By Trips with Ricker's Development

Capacity Analysis

Existing Signal Timing and Turn Lane Configuration Requirements

The intersection of SR 46 and Westwood Boulevard/ N 325 W has an uncoordinated, actuated signal. SR 46 has a maximum green time of 60 seconds and a minimum green time of 10 seconds. Westwood Boulevard and N 325 have a maximum green time of 30 seconds and a minimum green time of 7 seconds. The east-west movements occur simultaneously as do the north-south movements. There are no dedicated turning phases. For a complete summary of the signal timing of this intersection, refer to Appendix F.

The current turn lane configuration was observed to be adequately storing vehicles during both the AM and PM peak hours. The intersection was then run in HCS 2010 to predict whether the turn lanes will continue to experience adequate storage with the addition of the trips generated by the Ricker's development.

Level of Service Requirements

Level of service (LOS) is a means of conveying the operating conditions of an intersection and is directly tied to the amount of delay a driver experiences at an intersection. Delay is used as the primary means of rating an intersection's functionality because it is directly linked to a driver's frustration, fuel consumption, travel delay and overall discomfort. The *Highway Capacity Manual* defines LOS using an A through F scale with A having the least amount of delay and F having the most. The delay related to each letter is shown in Table 1 and is also based on the type of traffic control used at an intersection.

Level of Service (LOS)	Unsignalized (Seconds of Delay Per Vehicle)	Signalized (Seconds of Delay Per Vehicle)
A	0 - 10.0	0 - 10.0
B	10.1 - 15.0	10.1 - 20.0
C	15.1 - 25.0	20.1 - 35.0
D	25.1 - 35.0	35.1 - 55.0
E	35.1 - 50.0	55.1 - 80.0
F	Over 50	Over 80

Table 1 – Level of Service Parameters

Each direction of travel at an intersection is assessed for its individual level of service. These individual ratings are then averaged in order to achieve an overall LOS for the intersection. For this study the intersection must achieve averaged LOS of a C or better to meet an acceptable level of operation.

Traffic Scenarios

Scenario 1 – Year 2016 existing AM and PM peak hour traffic without the Ricker's site.

This is the baseline scenario analyzed for LOS using the traffic analysis software HCS 2010. This scenario analyzes the existing roadway network in year 2016 assuming that the proposed Ricker's development is not present. Table 2 shows the existing LOS and a view of the existing turning movements can be seen in Figure 3.

2016 AM - Peak Hour Turning Volumes Pre-Development												
Approach	SR 46 - EB			SR 46 - WB			Westwood Boulevard - NB			N 325 W - SB		
Approach Movement	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Control Delay, s/veh	5.3	4.1	4.1	4.8	3.8	3.2	32.7	33.1		36.9	32.0	
Level of Service (LOS)	A	A	A	A	A	A	C	C		D	C	
Approach Delay, s/veh	4.3			3.8			33.1			35.2		
Approach Leve of Service	A			A			C			D		
Intersection Delay, s/veh / Interseciton LOS	8.6						A					
2016 PM - Peak Hour Turning Volumes Pre-Development												
Approach	SR 46 - EB			SR 46 - WB			Westwood Boulevard - NB			N 325 W - SB		
Approach Movement	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Control Delay, s/veh	10.7	5.2	5.2	6.6	7.5	4.6	41.0	30.0		35.1	36.6	
Level of Service (LOS)	B	A	A	A	A	A	D	C		D	D	
Approach Delay, s/veh	6.0			7.2			32.0			36.0		
Approach Leve of Service	A			A			C			D		
Intersection Delay, s/veh / Interseciton LOS	14.3						B					

Table 2 – Existing Level of Service Year 2016 without Development

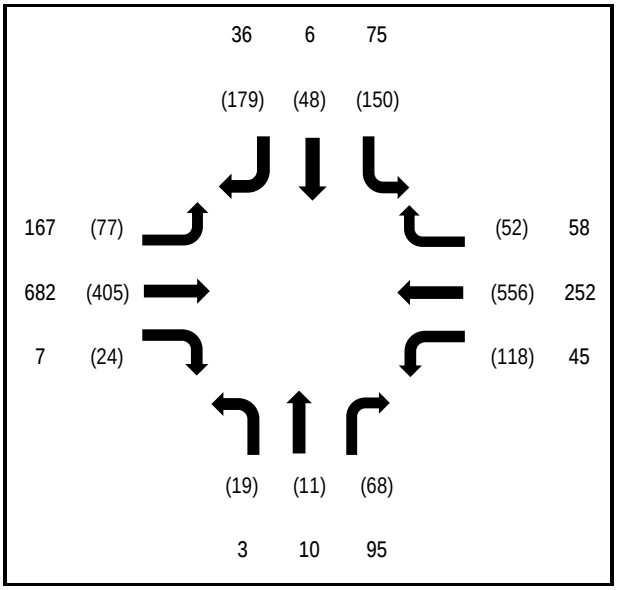
Scenario 2 – Year 2016 existing AM and PM peak hour traffic with proposed Ricker's Development.

This scenario looks at the existing intersection with the proposed Ricker's development using opening day traffic volumes for year 2016. The LOS rating for the intersection is shown in Table 3 and a view of turning movements can be seen in Figure 8.

2016 AM - Peak Hour Turning Volumes Post-Development												
Approach	SR 46 - EB			SR 46 - WB			Westwood Boulevard - NB			N 325 W - SB		
Approach Movement	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Control Delay, s/veh	5.7	4.4	4.4	5.4	4.1	3.4	32.4	33.1		37.3	31.6	
Level of Service (LOS)	A	A	A	A	A	A	C	C		D	C	
Approach Delay, s/veh	4.6			4.1			33.1			35.3		
Approach Leve of Service	A			A			C			D		
Intersection Delay, s/veh / Interseciton LOS	9.2						A					
2016 PM - Peak Hour Turning Volumes Post-Development												
Approach	SR 46 - EB			SR 46 - WB			Westwood Boulevard - NB			N 325 W - SB		
Approach Movement	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Control Delay, s/veh	11.4	5.6	5.6	6.9	7.1	4.9	41.3	30.1		36.0	36.0	
Level of Service (LOS)	B	A	A	A	A	A	D	C		D	D	
Approach Delay, s/veh	6.5			6.9			32.3			36.0		
Approach Leve of Service	A			A			C			D		
Intersection Delay, s/veh / Interseciton LOS	14.6						B					

Table 3 – Opening Day Level of Service Year 2016 with Development

SR 46 & Westwood Bouldard / N 325 W



AM Rates (PM Rates)

Figure 8 – 2016 Traffic Turning Movements and Flow Rates with Development

Scenario 3 – Year 2036 existing AM and PM peak hour traffic without the Ricker's site.

This is the baseline scenario analyzed for LOS using the traffic analysis software HCS 2010. This scenario analyzes the existing roadway network in year 2036 assuming that the proposed Ricker's development is not present. Table 4 shows the existing level of service and a view of the existing turning movements can be seen in Figure 9.

2036 AM - Peak Hour Turning Volumes Without Development												
Approach	SR 46 - EB			SR 46 - WB			Westwood Boulevard - NB			N 325 W - SB		
Approach Movement	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Control Delay, s/veh	7.3	5.1	5.1	6.5	4.7	3.8	32.3	32.6		37.5	31.3	
Level of Service (LOS)	A	A	A	A	A	A	C	C		D	C	
Approach Delay, s/veh	5.6			4.7			32.6			35.3		
Approach Leve of Service	A			B			C			D		
Intersection Delay, s/veh / Interseciton LOS	9.5						A					
2036 PM - Peak Hour Turning Volumes Without Development												
Approach	SR 46 - EB			SR 46 - WB			Westwood Boulevard - NB			N 325 W - SB		
Approach Movement	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Control Delay, s/veh	17.4	6.7	6.7	9.1	10.8	5.7	42.7	28.9		35.2	40.4	
Level of Service (LOS)	B	A	A	A	B	A	D	C		D	D	
Approach Delay, s/veh	8.3			10.2			31.4			38.3		
Approach Leve of Service	A			B			C			D		
Intersection Delay, s/veh / Interseciton LOS	16.8						B					

Table 4 –Level of Service Year 2036 without Development

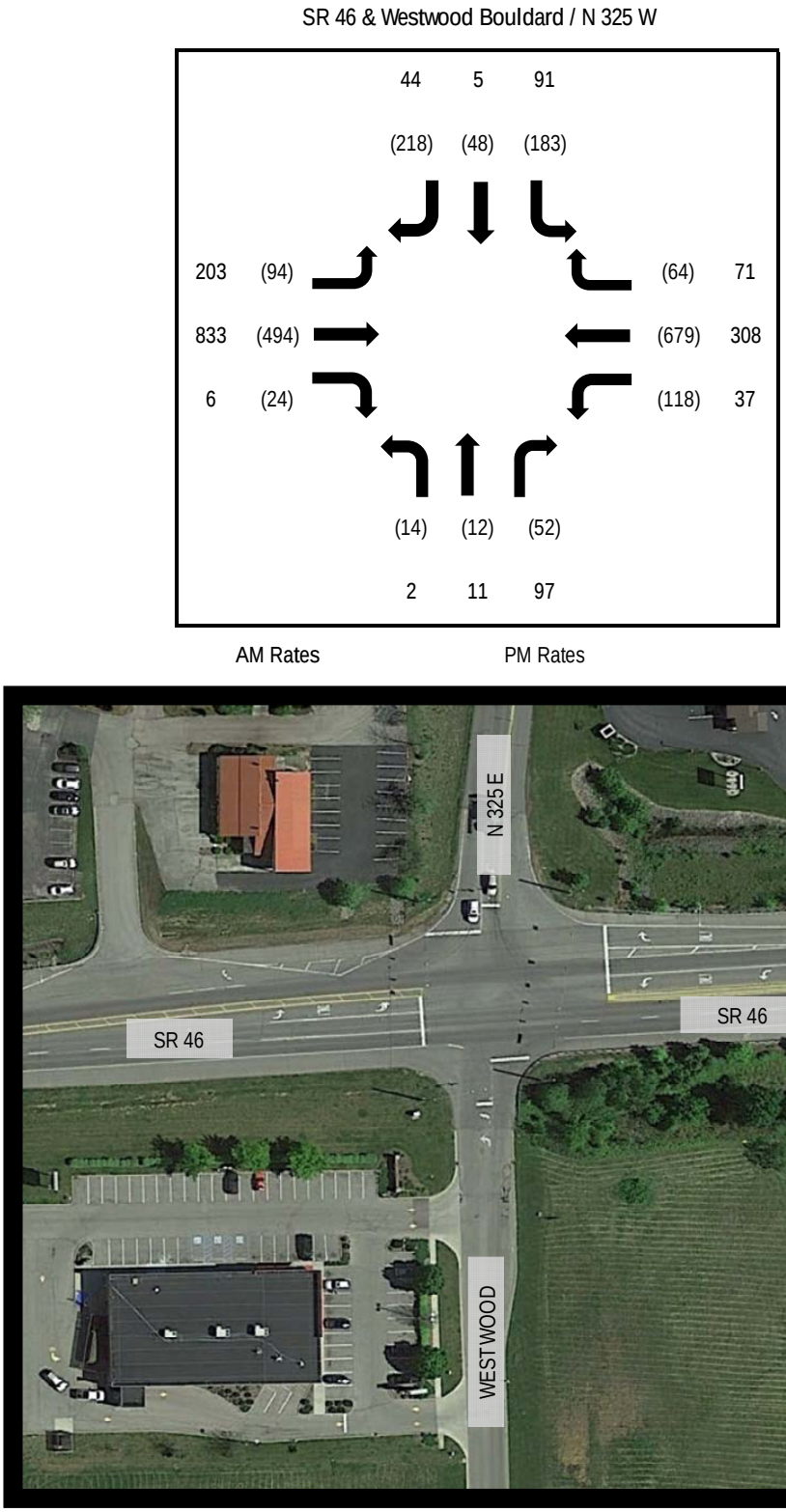


Figure 9 – 2036 Traffic Turning Movements and Flow Rates without Development

Scenario 4 – Year 2036 existing AM and PM peak hour traffic with proposed Ricker's Development.

This scenario looks at the existing intersection with the proposed Ricker's development using opening day traffic volumes for year 2036. The LOS rating for the intersection is shown in Table 5 and a view of turning movements can be seen in Figure 10.

2036 AM - Peak Hour Turning Volumes With Development												
Approach	SR 46 - EB			SR 46 - WB			Westwood Boulevard - NB			N 325 W - SB		
Approach Movement	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Control Delay, s/veh	7.8	5.5	5.5	7.3	5.0	4.1	31.9	32.6		37.9	30.9	
Level of Service (LOS)	A	A	A	A	A	A	C	C		D	D	
Approach Delay, s/veh	6.0			5.1			32.6			35.4		
Approach Leve of Service	A			A			C			D		
Intersection Delay, s/veh / Interseciton LOS	10.1						B					
2036 PM - Peak Hour Turning Volumes With Development												
Approach	SR 46 - EB			SR 46 - WB			Westwood Boulevard - NB			N 325 W - SB		
Approach Movement	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Control Delay, s/veh	15.3	6.3	6.3	8.9	9.5	5.4	41.2	29.2		37.2	35.1	
Level of Service (LOS)	B	A	A	A	A	A	D	C		D	D	
Approach Delay, s/veh	7.6			9.1			32.0			35.9		
Approach Leve of Service	A			A			C			D		
Intersection Delay, s/veh / Interseciton LOS	15.8						B					

Table 5 – Forecasting Level of Service Year 2036 with Development

SR 46 & Westwood Bouldard / N 325 W

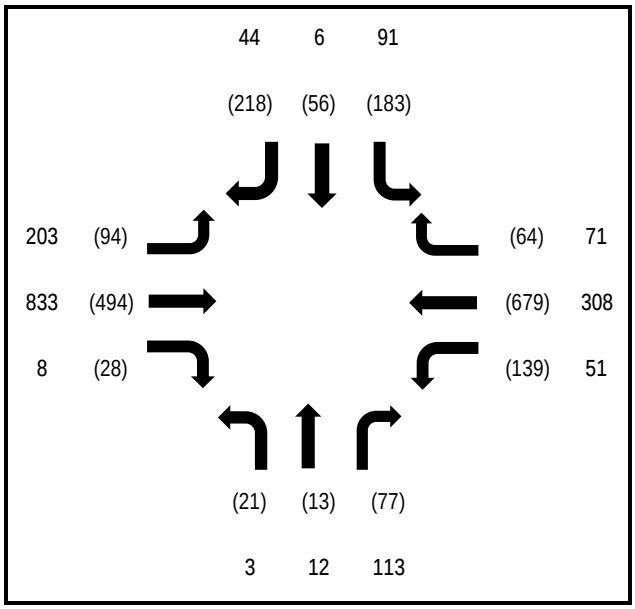


Figure 10 – 2036 Traffic Turning Movements and Flow Rates with Development

Summary of Findings and Recommendations

After completing an analysis of the intersection for all of the aforementioned scenarios IEI concludes that the proposed Ricker's site will not aversely effect the intersection enough to warrant any updates to the existing geometrics of the intersection. The signal timing also does not need to be modified to for the opening day or 2036 volumes expected for the Ricker's development.

2016 AM - Peak Hour Turning Volumes Pre-Development				
Intersection	SR 46 - EB	SR 46 - WB	Westwood Boulevard - NB	N 325 W - SB
Intersection Delay, s/veh / Interseciton LOS	8.6		A	
2016 PM - Peak Hour Turning Volumes Pre-Development				
Intersection	SR 46 - EB	SR 46 - WB	Westwood Boulevard - NB	N 325 W - SB
Intersection Delay, s/veh / Interseciton LOS	14.3		B	
2016 AM - Peak Hour Turning Volumes Post-Development				
Intersection	SR 46 - EB	SR 46 - WB	Westwood Boulevard - NB	N 325 W - SB
Intersection Delay, s/veh / Interseciton LOS	9.2		A	
2016 PM - Peak Hour Turning Volumes Post-Development				
Intersection	SR 46 - EB	SR 46 - WB	Westwood Boulevard - NB	N 325 W - SB
Intersection Delay, s/veh / Interseciton LOS	14.6		B	
2036 AM - Peak Hour Turning Volumes Without Development				
Intersection	SR 46 - EB	SR 46 - WB	Westwood Boulevard - NB	N 325 W - SB
Intersection Delay, s/veh / Interseciton LOS	9.5		A	
2036 PM - Peak Hour Turning Volumes Without Development				
Intersection	SR 46 - EB	SR 46 - WB	Westwood Boulevard - NB	N 325 W - SB
Intersection Delay, s/veh / Interseciton LOS	16.8		B	
2036 AM - Peak Hour Turning Volumes With Development				
Intersection	SR 46 - EB	SR 46 - WB	Westwood Boulevard - NB	N 325 W - SB
Intersection Delay, s/veh / Interseciton LOS	10.1		B	
2036 PM - Peak Hour Turning Volumes With Development				
Intersection	SR 46 - EB	SR 46 - WB	Westwood Boulevard - NB	N 325 W - SB
Intersection Delay, s/veh / Interseciton LOS	15.8		B	

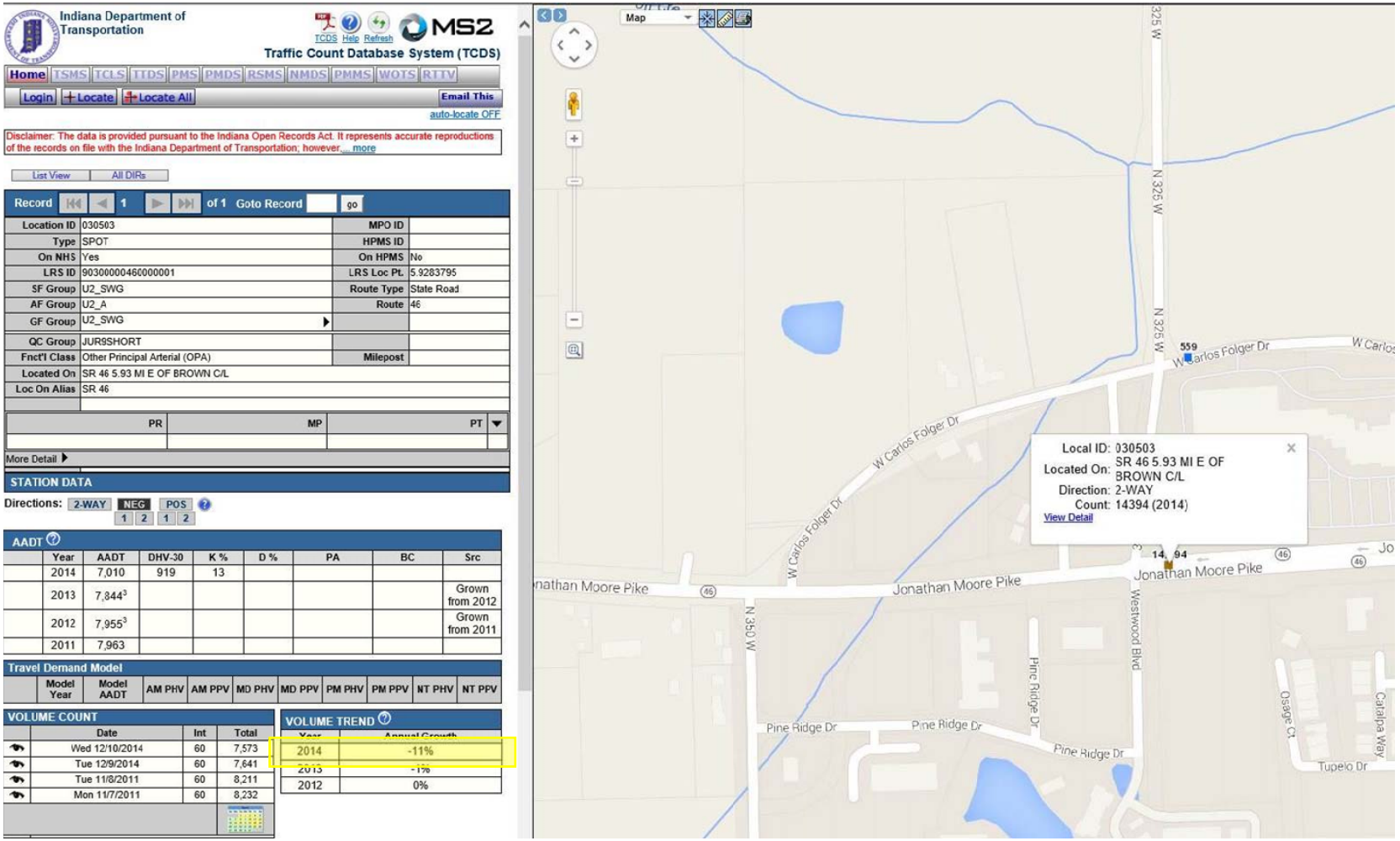
Table 6 – Summary of Findings

Appendices

Appendix A – INDOT Traffic Data – SR 46
Appendix B – Collected Traffic Data – Westwood Boulevard & N 325 W
Appendix C – Turning Movements
Appendix D – HCS 2010 Capacity Analysis for Year 2016
Appendix E – HCS 2010 Capacity Analysis for Year 2036
Appendix F – INDOT Signal Timing

Appendix A – INDOT Traffic Data – SR 46

West Bound SR 46 Growth Rate



Indiana Department of Transportation

TCDS Help Refresh MS2

Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTTV

Login | Locate | Locate All | Email This

auto-locate OFF

Disclaimer: The data is provided pursuant to the Indiana Open Records Act. It represents accurate reproductions of the records on file with the Indiana Department of Transportation; however,... more

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	030503	MPO ID	
Type	SPOT	HPMS ID	
On NHS	Yes	On HPMS	No
LRS ID	90300000460000001	LRS Loc Pt.	5.9283795
SF Group	U2_SWG	Route Type	State Road
AF Group	U2_A	Route	46
GF Group	U2_SWG		
QC Group	JUR9SHORT		
Fnct'l Class	Other Principal Arterial (OPA)	Milepost	
Located On	SR 46 5.93 MI E OF BROWN C/L		
Loc On Alias	SR 46		

PR	MP	PT

More Detail

STATION DATA

Directions: 2-WAY | NEG (1 2) | POS (1 2)

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2014	7,010	919	13				
	2013	7,844[3]						Grown from 2012
	2012	7,955[3]						Grown from 2011
	2011	7,963						

Travel Demand Model

	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

	Date	Int	Total
	Wed 12/10/2014	60	7,573
	Tue 12/9/2014	60	7,641
	Tue 11/8/2011	60	8,211
	Mon 11/7/2011	60	8,232

VOLUME TREND

Year	Annual Growth
2014	-11%
2013	-1%
2012	0%

Map

Local ID: 030503
Located On: SR 46 5.93 MI E OF BROWN C/L
Direction: 2-WAY
Count: 14394 (2014)
View Detail

559

14,394

N 325 W

W Carlos Folger Dr

Jonathan Moore Pike

N 350 W

Westwood Blvd

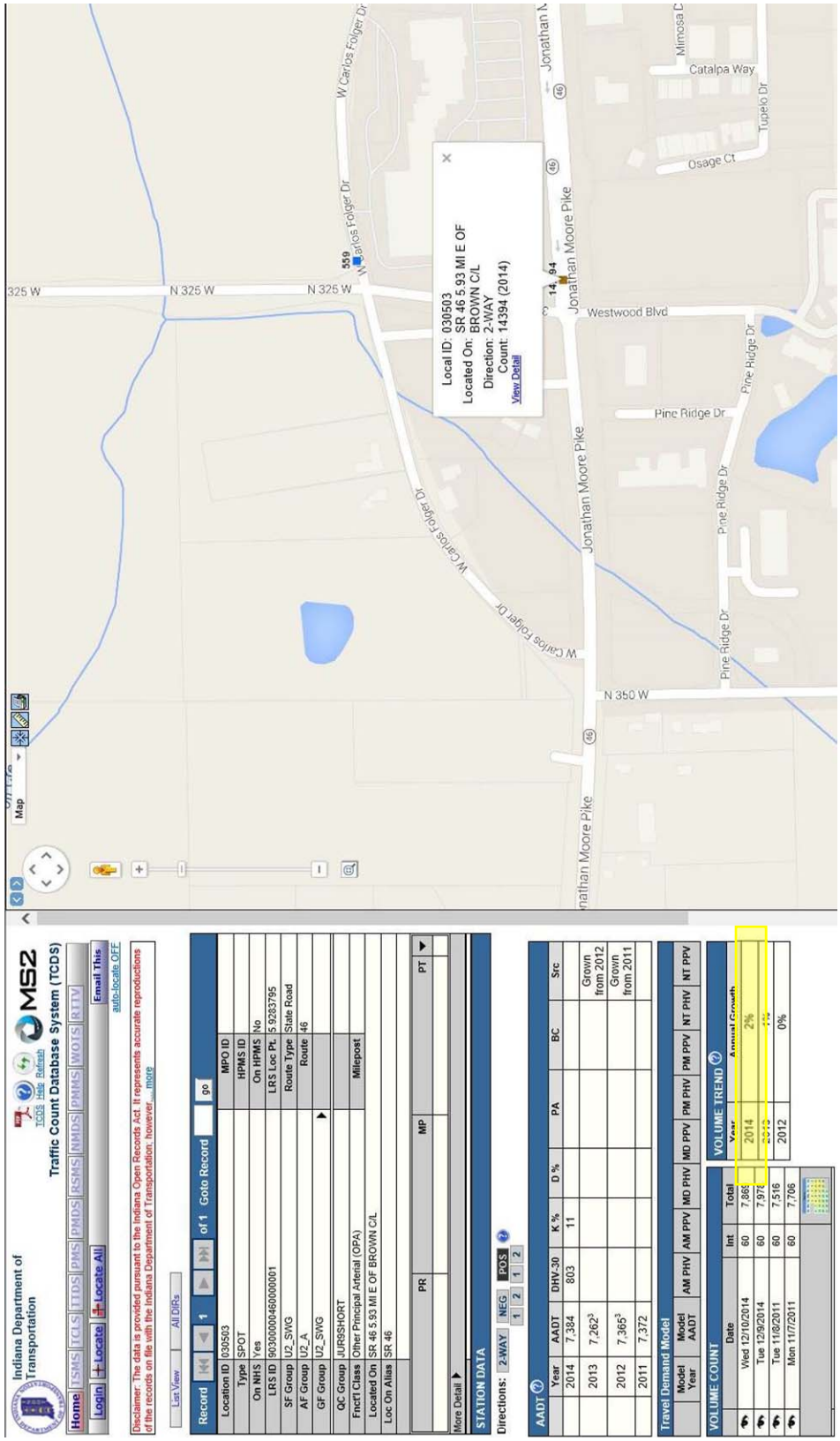
Pine Ridge Dr

Osage Ct

Catalpa Way

Tupelo Dr

East Bound SR 46 Growth Rate



SR 46 West Bound Outside Lane AM and PM Peak Hour Counts 12/09/2014

Indiana Department of Transportation

MS2 Traffic Count Database System (TCDS)

TCDS Help Refresh

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTTV

Back | Login | Locate | Locate All

auto-locate OFF

Volume Count Report

LOCATION INFO	
Location ID	030503_1_NEG
Type	SPOT
Fnct'l Class	3
Located On	SR 46 5.93 MI E OF BROWN C/L
Loc On Alias	SR 46
Direction	1
Community	
MPO ID	
HPMS ID	
Agency	Indiana DOT

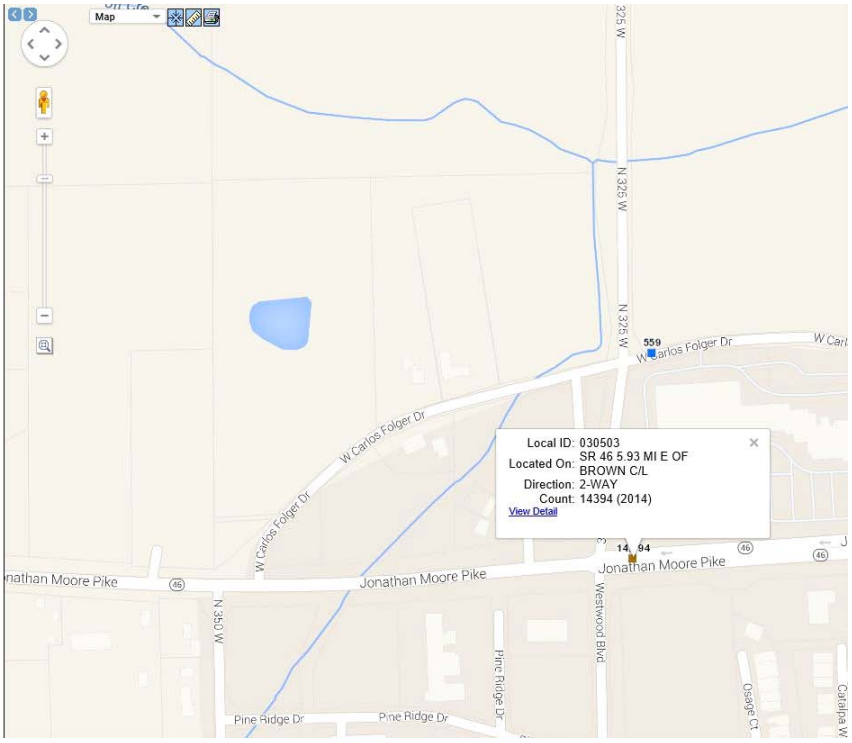
COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 12/9/2014
End Date	Wed 12/10/2014
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	
Notes	indot
Count Source	000JMB157188
Weather	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	43
1:00-2:00	25
2:00-3:00	16
3:00-4:00	18
4:00-5:00	34
5:00-6:00	52
6:00-7:00	138
7:00-8:00	253
8:00-9:00	351
9:00-10:00	281
10:00-11:00	311
11:00-12:00	329
12:00-13:00	349
13:00-14:00	366
14:00-15:00	420
15:00-16:00	584
16:00-17:00	682
17:00-18:00	814
18:00-19:00	463
19:00-20:00	375
20:00-21:00	277
21:00-22:00	209
22:00-23:00	103
23:00-24:00	84
Total	6,577
AADT	5,916
AM Peak	08:00-09:00 351
PM Peak	17:00-18:00 814

Count Navigation: |<< < > >>|

Directions: 2-WAY NEG POS

1 2 1 2



SR 46 West Bound Outside Lane AM and PM Peak Hour Counts 12/10/2014

Indiana Department of Transportation

MS2 Traffic Count Database System (TCDS)

TCDS Help Refresh

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTTV

Back | Login | Locate | Locate All

auto-locate OFF

Volume Count Report

LOCATION INFO	
Location ID	030503_1_NEG
Type	SPOT
Fnct'l Class	3
Located On	SR 46 5.93 MI E OF BROWN C/L
Loc On Alias	SR 46
Direction	1
Community	
MPO ID	
HPMS ID	
Agency	Indiana DOT

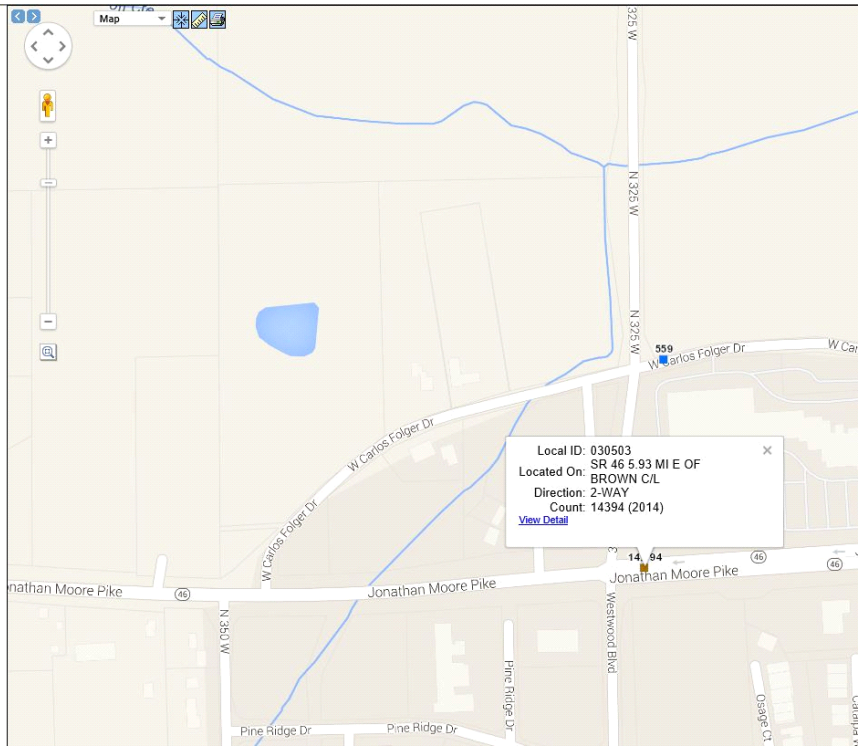
COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 12/10/2014
End Date	Thu 12/11/2014
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	
Notes	indot
Count Source	000JMB157188
Weather	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	43
1:00-2:00	23
2:00-3:00	15
3:00-4:00	11
4:00-5:00	31
5:00-6:00	46
6:00-7:00	156
7:00-8:00	279
8:00-9:00	363
9:00-10:00	260
10:00-11:00	299
11:00-12:00	311
12:00-13:00	348
13:00-14:00	394
14:00-15:00	388
15:00-16:00	571
16:00-17:00	639
17:00-18:00	756
18:00-19:00	478
19:00-20:00	340
20:00-21:00	315
21:00-22:00	222
22:00-23:00	105
23:00-24:00	85
Total	6,478
AADT	6,108
AM Peak	08:00-09:00 363
PM Peak	17:00-18:00 756

Count Navigation: |<< < > >>|

Directions: 2-WAY NEG POS

1 2 1 2



SR 46 West Bound Inside Lane AM and PM Peak Hour Counts 12/09/2014

Indiana Department of Transportation

TCDS Help Refresh MS2

Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTTV

Back | Login | Locate | Locate All

auto-locate OFF

Volume Count Report

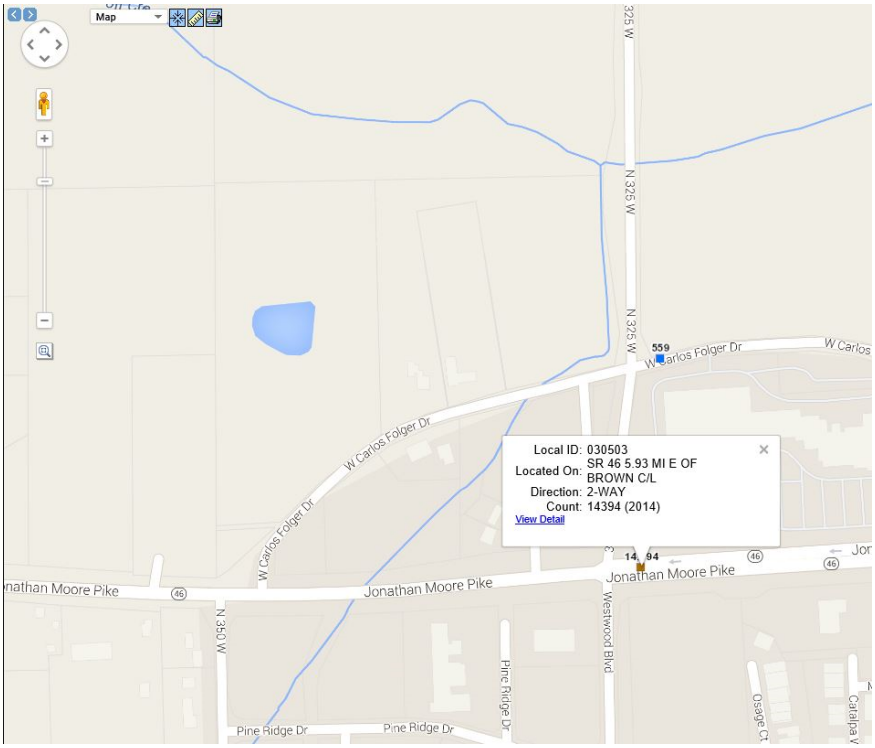
LOCATION INFO	
Location ID	030503_2_NEG
Type	SPOT
Fnct'l Class	3
Located On	SR 46 5.93 MI E OF BROWN C/L
Loc On Alias	SR 46
Direction	2
Community	
MPO ID	
HPMS ID	
Agency	Indiana DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 12/9/2014
End Date	Wed 12/10/2014
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	
Notes	indot
Count Source	000JMB153285
Weather	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	4
1:00-2:00	6
2:00-3:00	4
3:00-4:00	3
4:00-5:00	2
5:00-6:00	9
6:00-7:00	36
7:00-8:00	62
8:00-9:00	62
9:00-10:00	58
10:00-11:00	54
11:00-12:00	69
12:00-13:00	56
13:00-14:00	63
14:00-15:00	72
15:00-16:00	98
16:00-17:00	106
17:00-18:00	105
18:00-19:00	46
19:00-20:00	40
20:00-21:00	51
21:00-22:00	28
22:00-23:00	14
23:00-24:00	16
Total	1,064
AADT	959
AM Peak	11:00-12:00 69
PM Peak	16:00-17:00 106

Count Navigation: |<< | < | > | >>|

Directions: 2-WAY NEG 1 2 POS 1 2



SR 46 West Bound Inside Lane AM and PM Peak Hour Counts 12/10/2014

Indiana Department of Transportation

TCDS Help Refresh MS2

Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTTV

Back | Login | Locate | Locate All

auto-locate OFF

Volume Count Report

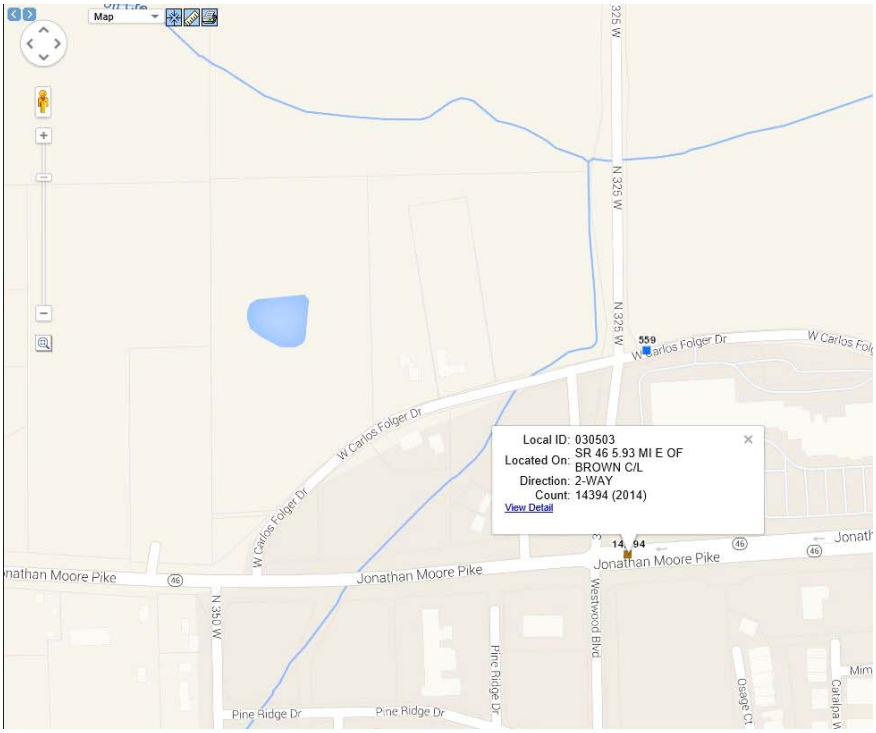
LOCATION INFO	
Location ID	030503_2_NEG
Type	SPOT
Fnct'l Class	3
Located On	SR 46 5.93 MI E OF BROWN C/L
Loc On Alias	SR 46
Direction	2
Community	
MPO ID	
HPMS ID	
Agency	Indiana DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 12/10/2014
End Date	Thu 12/11/2014
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	
Notes	indot
Count Source	000JMB153285
Weather	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube

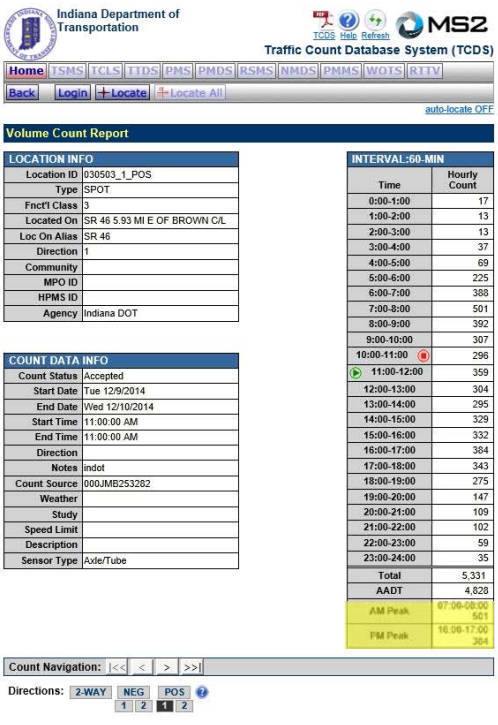
INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	7
1:00-2:00	3
2:00-3:00	4
3:00-4:00	2
4:00-5:00	6
5:00-6:00	9
6:00-7:00	30
7:00-8:00	75
8:00-9:00	62
9:00-10:00	62
10:00-11:00	64
11:00-12:00	60
12:00-13:00	73
13:00-14:00	73
14:00-15:00	69
15:00-16:00	103
16:00-17:00	95
17:00-18:00	94
18:00-19:00	72
19:00-20:00	39
20:00-21:00	44
21:00-22:00	23
22:00-23:00	17
23:00-24:00	9
Total	1,095
AADT	1,038
AM Peak	07:00-08:00 75
PM Peak	15:00-16:00 103

Count Navigation: |<< | < | > | >>|

Directions: 2-WAY NEG 1 2 POS 1 2



SR 46 East Bound Outside Lane AM and PM Peak Hour Counts 12/09/2014



Indiana Department of Transportation

MS2 Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTTV

Back | Login | Locate | Locate All

auto-locate OFF

Volume Count Report

LOCATION INFO	
Location ID	030503_1_POS
Type	SPOT
Fnct'l Class	3
Located On	SR 46 5.93 MI E OF BROWN C/L
Loc On Alias	SR 46
Direction	1
Community	
MPO ID	
HPMS ID	
Agency	Indiana DOT

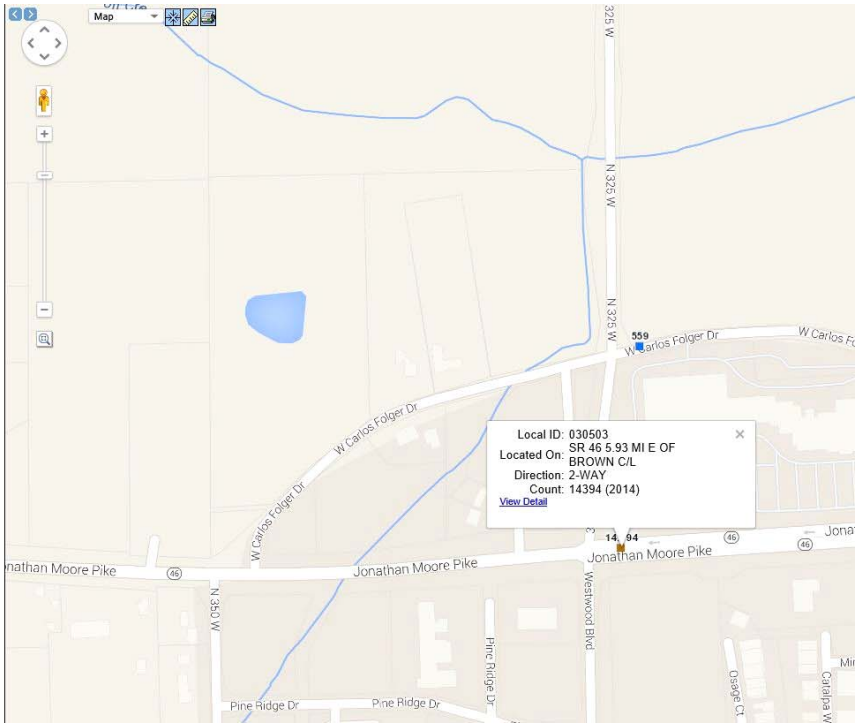
COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 12/9/2014
End Date	Wed 12/10/2014
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	
Notes	indot
Count Source	000JMB253282
Weather	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	17
1:00-2:00	13
2:00-3:00	13
3:00-4:00	37
4:00-5:00	69
5:00-6:00	225
6:00-7:00	388
7:00-8:00	501
8:00-9:00	392
9:00-10:00	307
10:00-11:00	296
11:00-12:00	359
12:00-13:00	304
13:00-14:00	295
14:00-15:00	329
15:00-16:00	332
16:00-17:00	384
17:00-18:00	343
18:00-19:00	275
19:00-20:00	147
20:00-21:00	109
21:00-22:00	102
22:00-23:00	59
23:00-24:00	35
Total	5,331
AADT	4,828
AM Peak	07:00-08:00 501
PM Peak	16:00-17:00 384

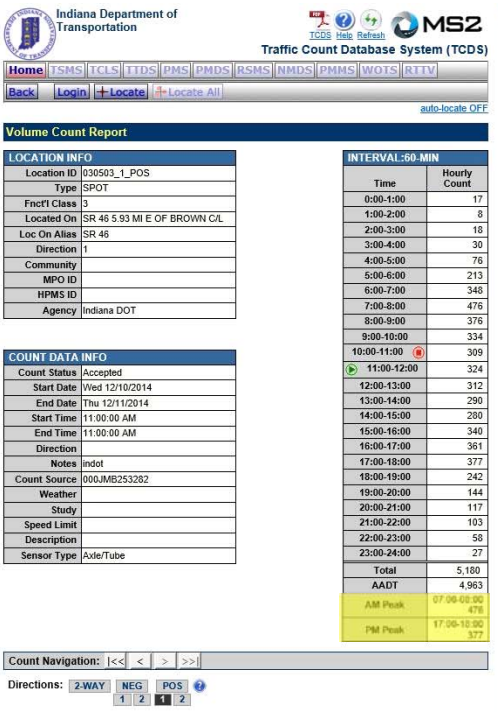
Count Navigation: |<< < > >>|

Directions: 2-WAY NEG POS

1 2 1 2



SR 46 East Bound Outside Lane AM and PM Peak Hour Counts 12/10/2014



Indiana Department of Transportation

MS2 Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WOTS | RTTV

Back | Login | Locate | Locate All

auto-locate OFF

Volume Count Report

LOCATION INFO	
Location ID	030503_1_POS
Type	SPOT
Fnct'l Class	3
Located On	SR 46 5.93 MI E OF BROWN C/L
Loc On Alias	SR 46
Direction	1
Community	
MPO ID	
HPMS ID	
Agency	Indiana DOT

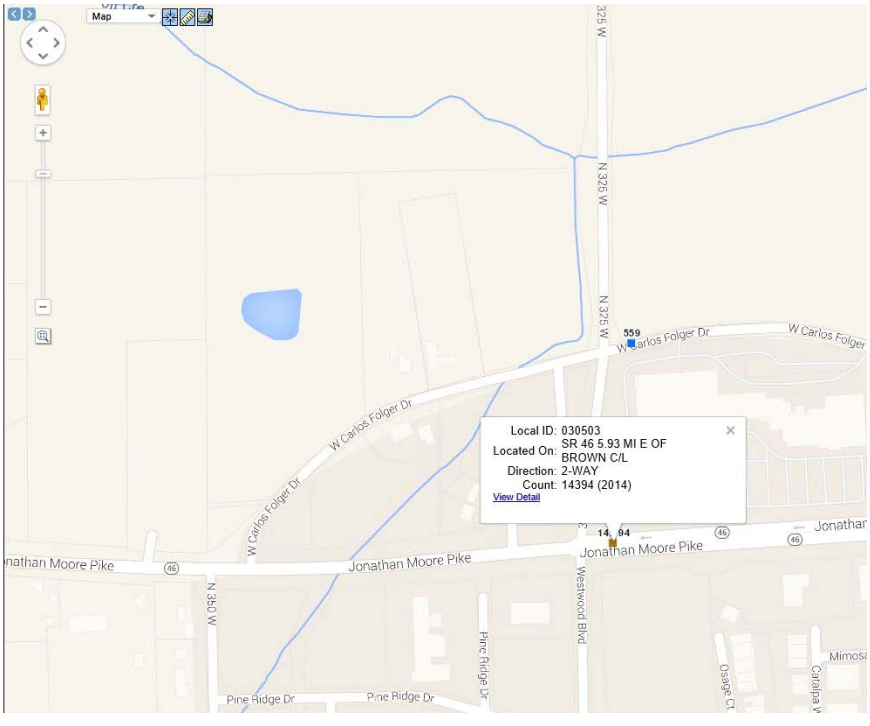
COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 12/10/2014
End Date	Thu 12/11/2014
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	
Notes	indot
Count Source	000JMB253282
Weather	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	17
1:00-2:00	8
2:00-3:00	18
3:00-4:00	30
4:00-5:00	76
5:00-6:00	213
6:00-7:00	348
7:00-8:00	476
8:00-9:00	376
9:00-10:00	334
10:00-11:00	309
11:00-12:00	324
12:00-13:00	312
13:00-14:00	290
14:00-15:00	280
15:00-16:00	340
16:00-17:00	361
17:00-18:00	377
18:00-19:00	242
19:00-20:00	144
20:00-21:00	117
21:00-22:00	103
22:00-23:00	58
23:00-24:00	27
Total	5,180
AADT	4,963
AM Peak	07:00-08:00 476
PM Peak	17:00-18:00 377

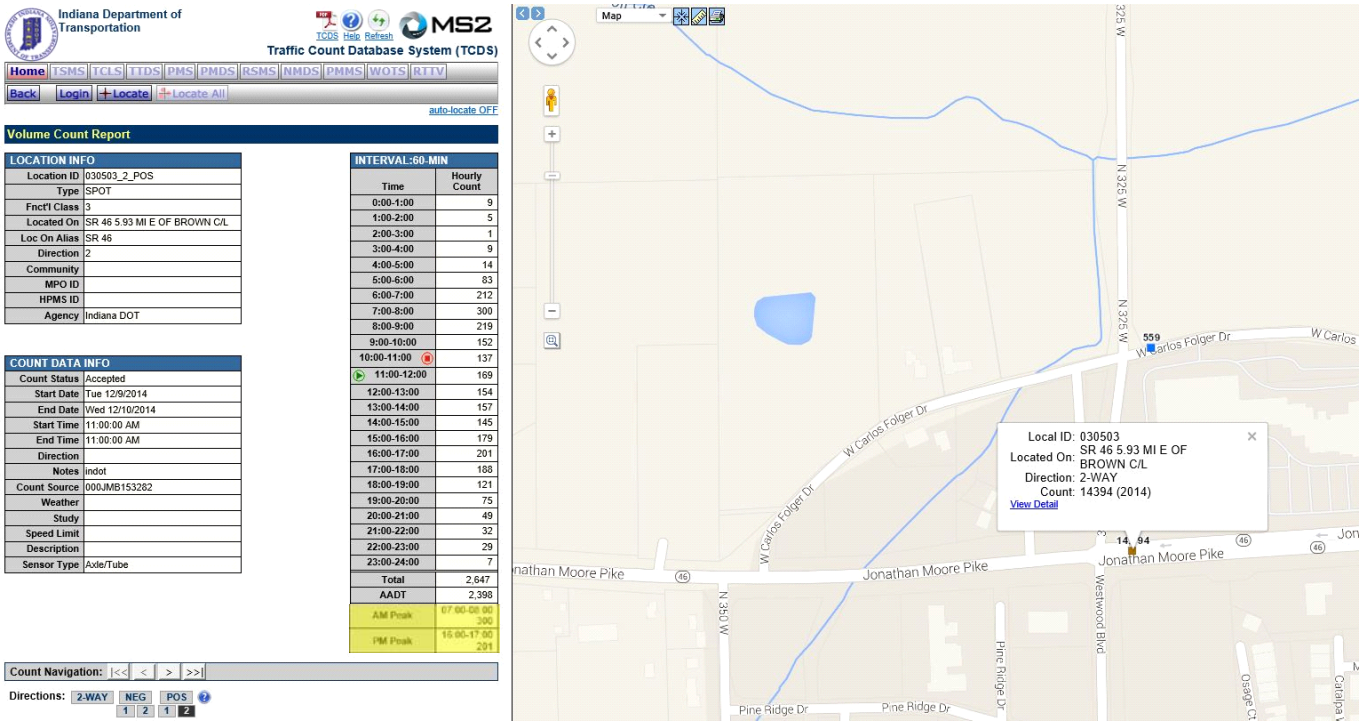
Count Navigation: |<< < > >>|

Directions: 2-WAY NEG POS

1 2 1 2



SR 46 East Bound Inside Lane AM and PM Peak Hour Counts 12/09/2014



Indiana Department of Transportation

MS2 Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WQTS | RTTV

Back | Login | Locate | Locate All

auto-locate OFF

Volume Count Report

LOCATION INFO	
Location ID	030503_2_POS
Type	SPOT
Fnct'l Class	3
Located On	SR 46 5.93 MI E OF BROWN C/L
Loc On Alias	SR 46
Direction	2
Community	
MPO ID	
HPMS ID	
Agency	Indiana DOT

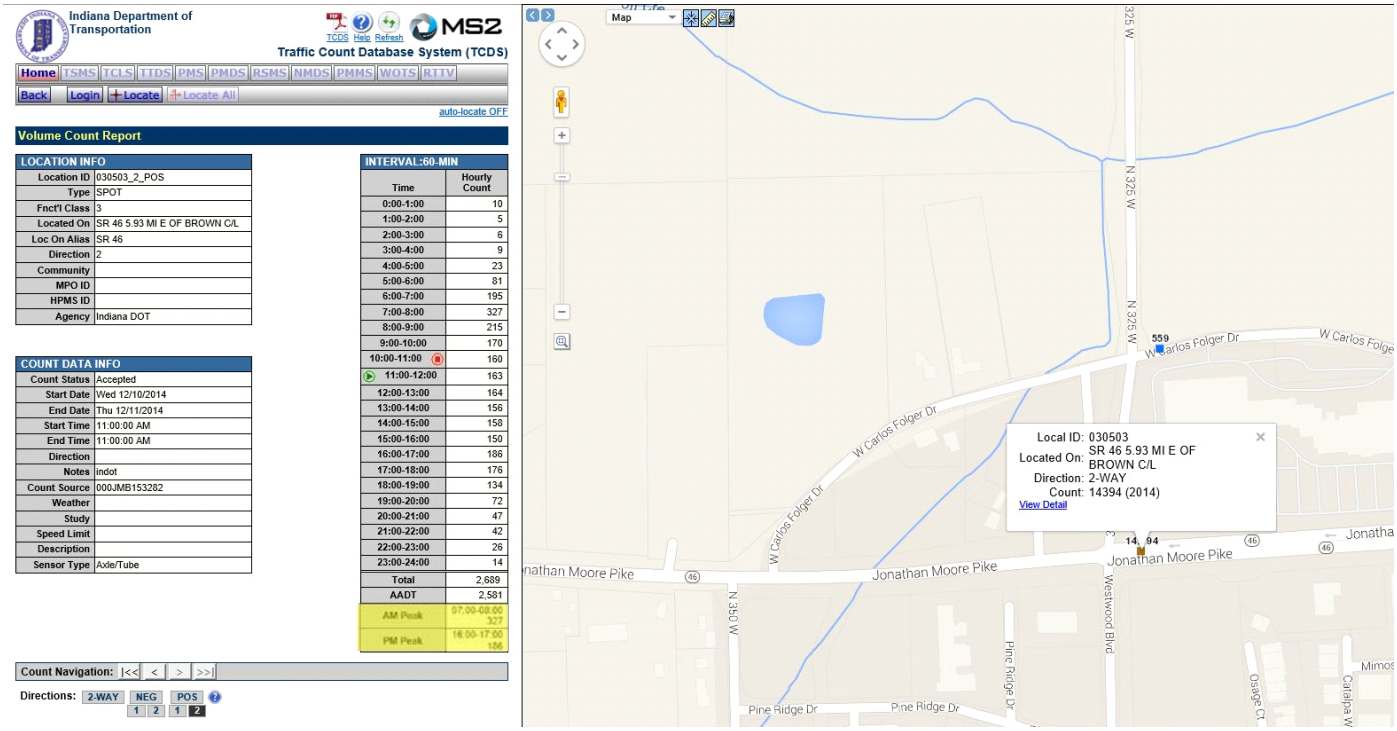
COUNT DATA INFO	
Count Status	Accepted
Start Date	Tue 12/9/2014
End Date	Wed 12/10/2014
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	
Notes	indot
Count Source	000JMB153282
Weather	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	9
1:00-2:00	5
2:00-3:00	1
3:00-4:00	9
4:00-5:00	14
5:00-6:00	83
6:00-7:00	212
7:00-8:00	300
8:00-9:00	219
9:00-10:00	152
10:00-11:00	137
11:00-12:00	169
12:00-13:00	154
13:00-14:00	157
14:00-15:00	145
15:00-16:00	179
16:00-17:00	201
17:00-18:00	188
18:00-19:00	121
19:00-20:00	75
20:00-21:00	49
21:00-22:00	32
22:00-23:00	29
23:00-24:00	7
Total	2,647
AADT	2,398
AM Peak	07:00-08:00 300
PM Peak	16:00-17:00 201

Count Navigation: |<< < > >>|

Directions: 2-WAY NEG POS (1 2 1 2)

SR 46 East Bound Inside Lane AM and PM Peak Hour Counts 12/10/2014



Indiana Department of Transportation

MS2 Traffic Count Database System (TCDS)

Home | TSMS | TCLS | TTDS | PMS | PMDS | RSMS | NMDS | PMMS | WQTS | RTTV

Back | Login | Locate | Locate All

auto-locate OFF

Volume Count Report

LOCATION INFO	
Location ID	030503_2_POS
Type	SPOT
Fnct'l Class	3
Located On	SR 46 5.93 MI E OF BROWN C/L
Loc On Alias	SR 46
Direction	2
Community	
MPO ID	
HPMS ID	
Agency	Indiana DOT

COUNT DATA INFO	
Count Status	Accepted
Start Date	Wed 12/10/2014
End Date	Thu 12/11/2014
Start Time	11:00:00 AM
End Time	11:00:00 AM
Direction	
Notes	indot
Count Source	000JMB153282
Weather	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	10
1:00-2:00	5
2:00-3:00	6
3:00-4:00	9
4:00-5:00	23
5:00-6:00	81
6:00-7:00	195
7:00-8:00	327
8:00-9:00	215
9:00-10:00	170
10:00-11:00	160
11:00-12:00	163
12:00-13:00	164
13:00-14:00	156
14:00-15:00	158
15:00-16:00	150
16:00-17:00	186
17:00-18:00	176
18:00-19:00	134
19:00-20:00	72
20:00-21:00	47
21:00-22:00	42
22:00-23:00	26
23:00-24:00	14
Total	2,689
AADT	2,581
AM Peak	07:00-08:00 327
PM Peak	16:00-17:00 186

Count Navigation: |<< < > >>|

Directions: 2-WAY NEG POS (1 2 1 2)

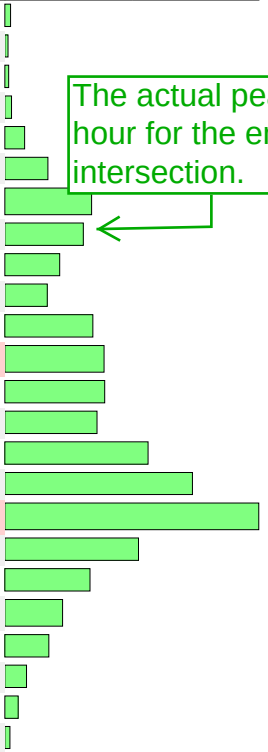
Appendix B – Collected Traffic Data – Westwood Boulevard & N 325 W

Infrastructure Engineering, Inc.
2601 Fortune Circle East, Suite 202B
Indianapolis, IN 46241

Site Code: SB N 325 W

Latitude: 39' 12.0320 North
Longitude: 85' 58.3950 West

Start Time	Mon 25-Jan-16	Tue 26-Jan-16	Wed 27-Jan-16	Thu 28-Jan-16	Fri 29-Jan-16	Average Day	Sat 30-Jan-16	Sun 31-Jan-16	Week Average
12:00 AM	*	*	10	8	10	9	*	*	9
01:00	*	*	4	3	9	5	*	*	5
02:00	*	*	2	8	7	6	*	*	6
03:00	*	*	14	7	9	10	*	*	10
04:00	*	*	30	30	28	29	*	*	29
05:00	*	*	56	63	69	63	*	*	63
06:00	*	*	128	116	**135**	126	*	*	126
07:00	*	*	110	115	118	114	*	*	114
08:00	*	*	97	90	52	80	*	*	80
09:00	*	*	80	106	1	62	*	*	62
10:00	*	*	117	140	*	128	*	*	128
11:00	*	*	**140**	**147**	*	**144**	*	*	**144**
12:00 PM	*	*	140	150	*	145	*	*	145
01:00	*	*	139	130	*	134	*	*	134
02:00	*	*	224	191	*	208	*	*	208
03:00	*	*	267	277	*	272	*	*	272
04:00	*	*	**372**	**364**	*	**368**	*	*	**368**
05:00	*	*	194	194	*	194	*	*	194
06:00	*	*	130	117	*	124	*	*	124
07:00	*	**71**	89	91	*	84	*	*	84
08:00	*	52	77	62	*	64	*	*	64
09:00	*	27	29	40	*	32	*	*	32
10:00	*	17	19	23	*	20	*	*	20
11:00	*	6	4	14	*	8	*	*	8
Day Total	0	173	2472	2486	438	2429	0	0	2429
% Avg. WkDay	0.0%	7.1%	101.8%	102.3%	18.0%				
% Avg. Week	0.0%	7.1%	101.8%	102.3%	18.0%	100.0%	0.0%	0.0%	
AM Peak	-	-	11:00	11:00	06:00	- 11:00	-	-	- 11:00 - -
Vol.	-	-	140	147	135	- 144	-	-	- 144 - -
PM Peak	-	19:00	16:00	16:00	-	- 16:00	-	-	- 16:00 - -
Vol.	-	71	372	364	-	- 368	-	-	- 368 - -
Grand Total	0	173	2472	2486	438	2429	0	0	2429



ADT ADT 2,429 AADT 2,429

Infrastructure Engineering, Inc.

2601 Fortune Circle East, Suite 202B
Indianapolis, IN 46241

Site Code: NB Westwood Blvd

Latitude: 39' 11.9300 North
Longitude: 85' 58.4010 West

Start Time	Mon 25-Jan-16	Tue 26-Jan-16	Wed 27-Jan-16	Thu 28-Jan-16	Fri 29-Jan-16	Average Day	Sat 30-Jan-16	Sun 31-Jan-16	Week Average
12:00 AM	*	*	2	1	3	2	*	*	2
01:00	*	*	1	2	4	2	*	*	2
02:00	*	*	2	0	0	1	*	*	1
03:00	*	*	0	1	2	1	*	*	1
04:00	*	*	6	2	5	4	*	*	4
05:00	*	*	16	15	16	16	*	*	16
06:00	*	*	49	49	39	46	*	*	46
07:00	*	*	**95**	**82**	**92**	**90**	*	*	**90**
08:00	*	*	68	79	60	69	*	*	69
09:00	*	*	40	46	25	37	*	*	37
10:00	*	*	27	55	*	41	*	*	41
11:00	*	*	46	55	*	50	*	*	50
12:00 PM	*	*	54	46	*	50	*	*	50
01:00	*	*	59	47	*	53	*	*	53
02:00	*	*	44	36	*	40	*	*	40
03:00	*	*	54	46	*	50	*	*	50
04:00	*	*	**66**	**62**	*	**64**	*	*	**64**
05:00	*	*	55	54	*	54	*	*	54
06:00	*	*	50	60	*	55	*	*	55
07:00	*	**33**	34	40	*	36	*	*	36
08:00	*	17	18	21	*	19	*	*	19
09:00	*	17	13	14	*	15	*	*	15
10:00	*	7	8	12	*	9	*	*	9
11:00	*	6	7	4	*	6	*	*	6
Day Total	0	80	814	829	246	810	0	0	810
% Avg. WkDay	0.0%	9.9%	100.5%	102.3%	30.4%				
% Avg. Week	0.0%	9.9%	100.5%	102.3%	30.4%	100.0%	0.0%	0.0%	
AM Peak	-	-	07:00	07:00	07:00	- 07:00	-	-	- - 07:00 - -
Vol.	-	-	95	82	92	- 90	-	-	- - 90 - -
PM Peak	-	19:00	16:00	16:00	-	- 16:00	-	-	- - 16:00 - -
Vol.	-	33	66	62	-	- 64	-	-	- - 64 - -
Grand Total	0	80	814	829	246	810	0	0	810

ADT ADT 809 AADT 809

Appendix C – Turning Movements

Infrastructure Engineering, Inc.
2601 Fortune Circle East, Suite 202B
Indianapolis, IN 46241

PM Counts
Time: 4:00 PM to 6 PM
Date: 1/26/2016

	N 35 W (SB Approach) From North				SR 46 (WB Approach) From East				Westwood Boulevard (NB Approach) From South				SR 46 (EB Approach) From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
4:00 PM	32	6	31		0	16	133	21	0	21	2	4	0	5	56	6	0
4:15 PM	39	6	33		0	17	128	21	1	22	5	5	0	2	92	11	0
4:30 PM	40	8	25		0	16	139	27	0	7	1	5	0	2	104	11	0
4:45 PM	32	7	37		0	17	163	20	0	13	4	5	0	1	97	20	0
5:00 PM	51	15	42		0	15	159	33	0	15	4	4	0	2	108	17	0
5:15 PM	52	8	49		0	7	156	27	0	18	7	6	0	4	86	7	0
5:30 PM	37	12	28		0	12	161	35	0	17	3	2	0	4	87	10	0
5:45 PM	33	7	21		0	9	117	17	0	15	3	4	0	3	82	10	0

SB Approach Total	651	WB Approach Total	1466	NB Approach Total	192	EB Approach Total	827
% Right	48.54%	% Right	7.44%	% Right	66.67%	% Right	2.78%
% Thru	10.60%	% Thru	78.85%	% Thru	15.10%	% Thru	86.09%
% Left	40.86%	% Left	13.71%	% Left	18.23%	% Left	11.12%
	100.00%		100.00%		100.00%		100.00%

Peak Hour from Mechanical Counts

AM DHV	**368**
Right Turns	179
Thru	39
Left Turns	150
	368

INDOT Projected 2016 Peak Hour (52+556+97 From HCS Input)

AM DHV	894
Right Turns	66
Thru	**705**
Left Turns	123
	894

Peak Hour from Mechanical Counts

AM DHV	**64**
Right Turns	43
Thru	10
Left Turns	12
	64

INDOT Projected 2016 Peak Hour (405+150+43 from HCS 2010 Input)

AM DHV	695
Right Turns	19
Thru	**598**
Left Turns	77
	695

% Heavy Right	5%	% Heavy Right	1%	% Heavy Right	1%	% Heavy Right	0%
% Heavy Thru	17%	% Heavy Thru	6%	% Heavy Thru	0%	% Heavy Thru	1%
% Heavy Left	0%	% Heavy Left	2%	% Heavy Left	0%	% Heavy Left	0%

Infrastructure Engineering, Inc.

2601 Fortune Circle East, Suite 202B
Indianapolis, IN 46241

AM Counts
Time: 6:00 AM to 8 AM
Date: 1/28/2016

	N 35 W (SB Approach) From North				SR 46 (WB Approach) From East				Westwood Boulevard (NB Approach) From South				SR 46 (EB Approach) From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
6:00 AM	1	0	12		0	2	21	1	0	4	0	0	0	0	87	9	0
6:15 AM	1	0	7		0	3	21	0	0	16	0	0	0	0	77	8	0
6:30 AM	5	1	16		0	6	24	2	0	18	4	0	0	2	110	14	0
6:45 AM	5	1	10		0	6	47	3	0	14	2	0	0	0	129	20	0
7:00 AM	6	1	15		0	12	48	3	0	10	1	1	0	2	130	38	0
7:15 AM	5	1	18		0	14	46	6	0	26	5	0	0	1	160	43	0
7:30 AM	15	1	27		0	16	56	7	0	34	2	2	0	1	174	36	0
7:45 AM	18	1	12		0	19	75	19	0	24	3	0	0	0	142	33	0

SB Approach Total	179	WB Approach Total	457	NB Approach Total	166	EB Approach Total	1216
% Right	31.28%	% Right	17.07%	% Right	87.95%	% Right	0.49%
% Thru	3.35%	% Thru	73.96%	% Thru	10.24%	% Thru	82.98%
% Left	65.36%	% Left	8.97%	% Left	1.81%	% Left	16.53%
	100.00%		100.00%		100.00%		100.00%
AM DHV	**114**	AM DHV	461	AM DHV	**90**	AM DHV	1008
Right Turns	36	Right Turns	79	Right Turns	79	Right Turns	5
Thru	4	Thru	**341**	Thru	9	Thru	**836**
Left Turns	75	Left Turns	41	Left Turns	2	Left Turns	167
	114		461		90		1008
% Heavy Right	5%	% Heavy Right	1%	% Heavy Right	1%	% Heavy Right	0%
% Heavy Thru	17%	% Heavy Thru	6%	% Heavy Thru	0%	% Heavy Thru	1%
% Heavy Left	0%	% Heavy Left	2%	% Heavy Left	0%	% Heavy Left	0%

Peak Hour from Mechanical Counts

INDOT Projected 2016 Peak Hour (58+252+31 From HCS 2010 Input)

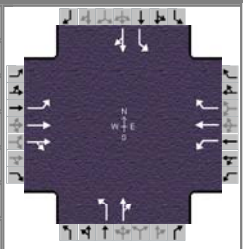
Peak Hour from Mechanical Counts

INDOT Projected 2016 Peak Hour (682+79+75 From HCS 2010 Input)

Appendix D – HCS 2010 Capacity Analysis for Year 2016

HCS 2010 Signalized Intersection Input Data

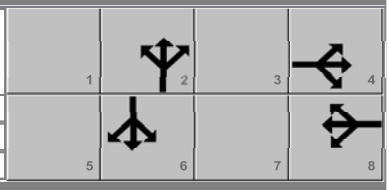
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Existing 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	167	682	5	31	252	58	2	9	79	75	4	36

Signal Information			
Cycle, s	82.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.8	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



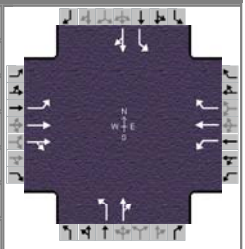
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	167	682	5	31	252	58	2	9	79	75	4	36
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		2	6	1	0	0		0	17	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	100	310		200	1150	750	160	195		290	313	
Grade (P_g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	45	45	45	45	45	45	35	35	35	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		60.0		60.0		30.0		30.0
Yellow Change Interval (*Y*), s	4.0	4.3	4.0	4.3	4.0	3.9	4.0	3.9
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	5	10	5	10	5	7	5	7
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	3.0	2.0	3.0	2.0	1.5	2.0	1.5
Recall Mode	Min	Max	Min	Max	Min	Min	Min	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Results Summary

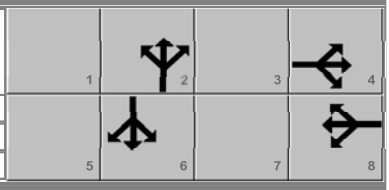
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Existing 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	167	682	5	31	252	58	2	9	79	75	4	36

Signal Information			
Cycle, s	82.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.8	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



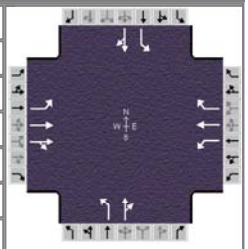
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		5.0		6.0		6.0
Phase Duration, s		65.8		65.8		16.2		16.2
Change Period, *(Y+Rc)*, s		5.8		5.8		5.4		5.4
Max Allow Headway *(MAH)*, s		4.1		4.1		2.8		2.8
Queue Clearance Time *(g_s)*, s		10.3		8.1		6.0		10.5
Green Extension Time *(g_e)*, s		5.0		5.0		0.3		0.2
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate *(v)*, veh/h	167	344	343	31	252	58	2	88		75	40	
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1086	1881	1876	752	1792	1594	1389	1636		1330	1398	
Queue Service Time *(g_s)*, s	4.7	4.9	4.9	1.2	3.6	0.8	0.1	4.0		4.5	2.1	
Cycle Queue Clearance Time *(g_c)*, s	8.3	4.9	4.9	6.1	3.6	0.8	2.2	4.0		8.5	2.1	
Capacity *(c)*, veh/h	833	1374	1371	592	1310	1165	237	218		199	186	
Volume-to-Capacity Ratio *(X)*	0.200	0.250	0.250	0.052	0.192	0.050	0.008	0.405		0.376	0.215	
Available Capacity *(c_a)*, veh/h	833	1374	1371	592	1310	1165	560	598		508	511	
Back of Queue *(Q)*, veh/ln (50th percentile)	0.8	1.3	1.3	0.2	0.9	0.2	0.0	1.6		1.4	0.7	
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Storage Ratio *(RQ)* (50th percentile)	0.21	0.10	0.10	0.02	0.02	0.01	0.01	0.20		0.12	0.06	
Uniform Delay *(d_1)*, s/veh	4.8	3.6	3.6	4.7	3.5	3.1	32.7	32.6		36.5	31.8	
Incremental Delay *(d_2)*, s/veh	0.5	0.4	0.4	0.2	0.3	0.1	0.0	0.4		0.4	0.2	
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay *(d)*, s/veh	5.3	4.1	4.1	4.8	3.8	3.2	32.7	33.1		36.9	32.0	
Level of Service (LOS)	A	A	A	A	A	A	C	C		D	C	
Approach Delay, s/veh / LOS	4.3	A		3.8	A		33.1	C		35.2	D	
Intersection Delay, s/veh / LOS	8.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

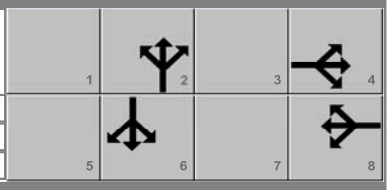
HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Existing 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	167	682	5	31	252	58	2	9	79	75	4	36

Signal Information											
Cycle, s	82.0	Reference Phase	2								
Offset, s	0	Reference Point	Begin								
Uncoordinated	Yes	Simult. Gap E/W	On								
Force Mode	Fixed	Simult. Gap N/S	On								
				Green	10.8	60.0	0.0	0.0	0.0	0.0	
				Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
				Red	1.5	1.5	0.0	0.0	0.0	0.0	



	EB			WB			NB			SB		
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.980	0.943	0.990	1.000	1.000	1.000	1.000	0.855	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.997			0.000			0.861			0.861	
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (*s*), veh/h		3730			1792			167			140	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (*P*)												
Incremental Delay Factor (*k*)	0.50	0.50	0.50	0.50	0.50	0.50	0.04	0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.8		5.8		5.4		5.4
Green Ratio (*g/C*)		0.73		0.73		0.13		0.13
Permitted Saturation Flow Rate (s_p), veh/h/ln		1086		752		1389		1330
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		60.0		60.0		10.9		10.9
Permitted Service Time (g_u), s		56.4		55.0		8.9		6.9
Permitted Queue Service Time (g_{ps}), s		4.7		1.2		0.1		4.5
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v								
Pedestrian F_s / F_{delay}								
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b								
Bicycle F_w / F_v								

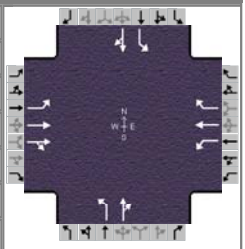
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS 2010 Signalized Intersection Input Data

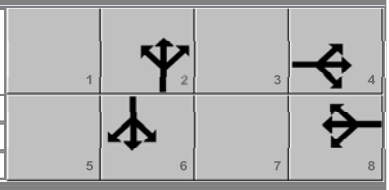
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Proposed 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	167	682	7	45	252	58	3	10	95	75	6	36

Signal Information			
Cycle, s	83.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.8	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



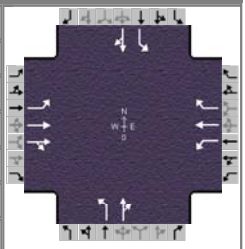
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	167	682	7	45	252	58	3	10	95	75	6	36
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		2	6	1	0	0		0	17	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	100	310		200	1150	750	160	195		290	313	
Grade (P_g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	45	45	45	45	45	45	35	35	35	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		60.0		60.0		30.0		30.0
Yellow Change Interval (*Y*), s	4.0	4.3	4.0	4.3	4.0	3.9	4.0	3.9
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	5	10	5	10	5	7	5	7
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	3.0	2.0	3.0	2.0	1.5	2.0	1.5
Recall Mode	Min	Max	Min	Max	Min	Min	Min	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

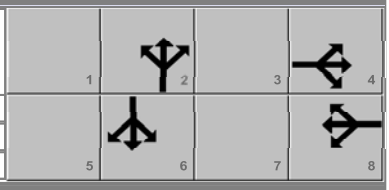
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Proposed 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	167	682	7	45	252	58	3	10	95	75	6	36

Signal Information												
Cycle, s	83.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	11.8	60.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.9	4.3	0.0	0.0	0.0	0.0		
				Red	1.5	1.5	0.0	0.0	0.0	0.0		



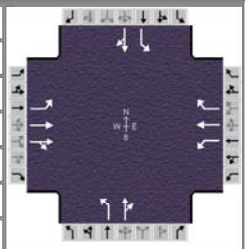
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		5.0		6.0		6.0
Phase Duration, s		65.8		65.8		17.2		17.2
Change Period, *(Y+Rc)*, s		5.8		5.8		5.4		5.4
Max Allow Headway *(MAH)*, s		4.1		4.1		2.8		2.8
Queue Clearance Time *(g_s)*, s		10.7		9.0		6.9		11.5
Green Extension Time *(g_e)*, s		5.1		5.2		0.3		0.3
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate *(v)*, veh/h	167	345	344	45	252	58	3	105		75	42	
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1086	1881	1874	751	1792	1594	1386	1634		1309	1407	
Queue Service Time *(g_s)*, s	4.9	5.2	5.2	1.8	3.8	0.9	0.2	4.9		4.6	2.2	
Cycle Queue Clearance Time *(g_c)*, s	8.7	5.2	5.2	7.0	3.8	0.9	2.3	4.9		9.5	2.2	
Capacity *(c)*, veh/h	821	1358	1353	582	1294	1151	250	234		198	201	
Volume-to-Capacity Ratio *(X)*	0.203	0.254	0.254	0.077	0.195	0.050	0.012	0.449		0.379	0.208	
Available Capacity *(c_a)*, veh/h	821	1358	1353	582	1294	1151	551	590		483	508	
Back of Queue *(Q)*, veh/ln (50th percentile)	0.9	1.4	1.4	0.2	1.0	0.2	0.1	1.9		1.4	0.7	
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Storage Ratio *(RQ)* (50th percentile)	0.22	0.11	0.11	0.03	0.02	0.01	0.01	0.24		0.12	0.07	
Uniform Delay *(d_1)*, s/veh	5.1	3.9	3.9	5.1	3.7	3.3	32.4	32.6		36.9	31.4	
Incremental Delay *(d_2)*, s/veh	0.6	0.5	0.5	0.3	0.3	0.1	0.0	0.5		0.4	0.2	
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay *(d)*, s/veh	5.7	4.4	4.4	5.4	4.1	3.4	32.4	33.1		37.3	31.6	
Level of Service (LOS)	A	A	A	A	A	A	C	C		D	C	
Approach Delay, s/veh / LOS	4.6	A		4.1	A		33.1	C		35.3	D	
Intersection Delay, s/veh / LOS	9.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS 2010 Signalized Intersection Intermediate Values

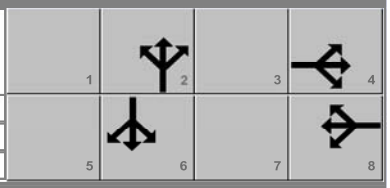
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Proposed 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	167	682	7	45	252	58	3	10	95	75	6	36

Signal Information			
Cycle, s	83.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.8	60.0	0.0	0.0	0.0	0.0
Yellow	3.9	4.3	0.0	0.0	0.0	0.0
Red	1.5	1.5	0.0	0.0	0.0	0.0



	EB			WB			NB			SB		
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.980	0.943	0.990	1.000	1.000	1.000	1.000	0.855	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.996			0.000			0.860			0.866	
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (*s*), veh/h		3717			1792			156			201	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (*P*)												
Incremental Delay Factor (*k*)	0.50	0.50	0.50	0.50	0.50	0.50	0.04	0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.8		5.8		5.4		5.4
Green Ratio (*g/C*)		0.72		0.72		0.14		0.14
Permitted Saturation Flow Rate (s_p), veh/h/ln		1086		751		1386		1309
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		60.0		60.0		11.9		11.9
Permitted Service Time (g_u), s		56.2		54.8		9.8		7.1
Permitted Queue Service Time (g_{ps}), s		4.9		1.8		0.2		4.6
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v								
Pedestrian F_s / F_{delay}								
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b								
Bicycle F_w / F_v								

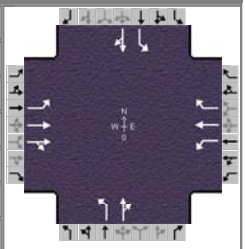
--- Messages ---

No errors or warnings exist.

--- Comments ---

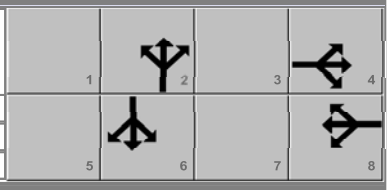
HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Existing 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	77	405	19	97	556	52	12	10	43	150	39	179

Signal Information												
Cycle, s	87.7	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	16.5	60.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.9	4.3	0.0	0.0	0.0	0.0		
				Red	1.5	1.5	0.0	0.0	0.0	0.0		



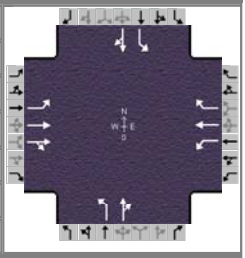
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	77	405	19	97	556	52	12	10	43	150	39	179
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		2	6	1	0	0		0	17	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	100	310		200	1150	750	160	195		290	313	
Grade (P_g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	45	45	45	45	45	45	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		60.0		60.0		35.0		35.0
Yellow Change Interval (*Y*), s	4.0	4.3	4.0	4.3	4.0	3.9	4.0	3.9
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	5	10	5	10	5	7	5	7
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	3.0	2.0	3.0	2.0	1.5	2.0	1.5
Recall Mode	Min	Max	Min	Max	Min	Min	Min	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

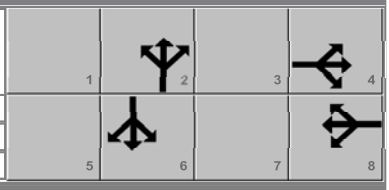
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Existing 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	77	405	19	97	556	52	12	10	43	150	39	179

Signal Information												
Cycle, s	87.7	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	16.5	60.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.9	4.3	0.0	0.0	0.0	0.0		
				Red	1.5	1.5	0.0	0.0	0.0	0.0		



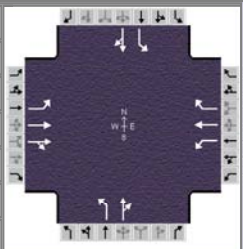
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		5.0		6.0		6.0
Phase Duration, s		65.8		65.8		21.9		21.9
Change Period, *(Y+Rc)*, s		5.8		5.8		5.4		5.4
Max Allow Headway *(MAH)*, s		4.1		4.1		2.8		2.8
Queue Clearance Time *(g_s)*, s		18.5		14.4		15.9		15.0
Green Extension Time *(g_e)*, s		5.3		5.4		0.6		0.6
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate *(v)*, veh/h	77	213	211	97	556	52	12	53		150	218	
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	826	1881	1851	959	1792	1594	1182	1658		1373	1415	
Queue Service Time *(g_s)*, s	4.1	3.5	3.6	3.5	12.4	0.9	0.9	2.4		9.0	13.0	
Cycle Queue Clearance Time *(g_c)*, s	16.5	3.5	3.6	7.1	12.4	0.9	13.9	2.4		11.4	13.0	
Capacity *(c)*, veh/h	530	1287	1267	700	1227	1091	129	311		303	266	
Volume-to-Capacity Ratio *(X)*	0.145	0.166	0.166	0.139	0.453	0.048	0.093	0.170		0.496	0.820	
Available Capacity *(c_a)*, veh/h	530	1287	1267	700	1227	1091	379	662		593	565	
Back of Queue *(Q)*, veh/ln (50th percentile)	0.7	1.1	1.1	0.6	3.7	0.2	0.3	0.9		3.0	4.5	
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Storage Ratio *(RQ)* (50th percentile)	0.18	0.09	0.09	0.08	0.09	0.01	0.04	0.12		0.25	0.41	
Uniform Delay *(d_1)*, s/veh	10.1	4.9	4.9	6.2	6.3	4.5	40.9	29.9		34.7	34.2	
Incremental Delay *(d_2)*, s/veh	0.6	0.3	0.3	0.4	1.2	0.1	0.1	0.1		0.5	2.4	
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay *(d)*, s/veh	10.7	5.2	5.2	6.6	7.5	4.6	41.0	30.0		35.1	36.6	
Level of Service (LOS)	B	A	A	A	A	A	D	C		D	D	
Approach Delay, s/veh / LOS	6.0	A		7.2	A		32.0	C		36.0	D	
Intersection Delay, s/veh / LOS	14.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

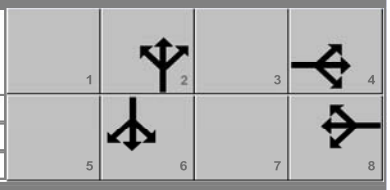
HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Existing 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	77	405	19	97	556	52	12	10	43	150	39	179

Signal Information					EB			WB			NB			SB		
Cycle, s	87.7	Reference Phase	2													
Offset, s	0	Reference Point	Begin	Green	16.5	60.0		0.0	0.0		0.0	0.0		0.0	0.0	
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.9	4.3		0.0	0.0		0.0	0.0		0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.5	1.5		0.0	0.0		0.0	0.0		0.0	0.0	



Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.980	0.943	0.990	1.000	1.000	1.000	1.000	0.855	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.984			0.000			0.873			0.871	
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (*s*), veh/h		3567			1792			313			253	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (*P*)												
Incremental Delay Factor (*k*)	0.50	0.50	0.50	0.50	0.50	0.50	0.04	0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.8		5.8		5.4		5.4
Green Ratio (*g/C*)		0.68		0.68		0.19		0.19
Permitted Saturation Flow Rate (s_p), veh/h/ln		826		959		1182		1373
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		60.0		60.0		16.5		16.5
Permitted Service Time (g_u), s		47.6		56.5		3.5		14.1
Permitted Queue Service Time (g_{ps}), s		4.1		3.5		0.9		9.0
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v								
Pedestrian F_s / F_{delay}								
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b								
Bicycle F_w / F_v								

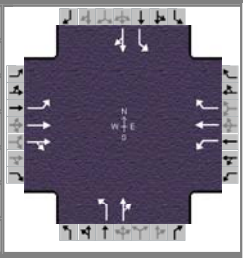
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS 2010 Signalized Intersection Input Data

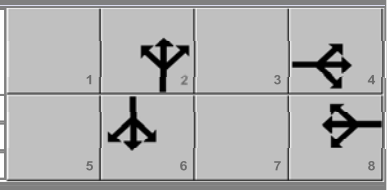
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Proposed 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	77	405	24	118	556	52	19	11	68	150	48	179

Signal Information			
Cycle, s	88.8	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	17.6	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



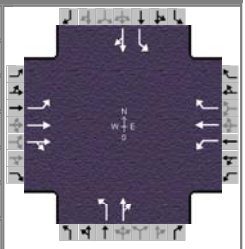
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	77	405	24	118	556	52	19	11	68	150	48	179
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		2	6	1	0	0		0	17	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	100	310		200	1150	750	160	195		290	313	
Grade (P_g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	45	45	45	45	45	45	35	35	35	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		60.0		60.0		35.0		35.0
Yellow Change Interval (*Y*), s	4.0	4.3	4.0	4.3	4.0	3.9	4.0	3.9
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	5	10	5	10	5	7	5	7
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	3.0	2.0	3.0	2.0	1.5	2.0	1.5
Recall Mode	Min	Max	Min	Off	Min	Min	Min	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Results Summary

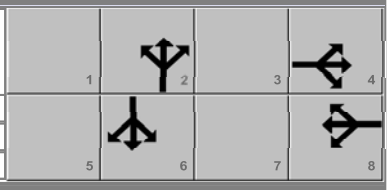
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Proposed 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	77	405	24	118	556	52	19	11	68	150	48	179

Signal Information			
Cycle, s	88.8	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	17.6	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



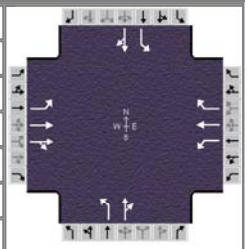
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		5.0		6.0		6.0
Phase Duration, s		65.8		65.8		23.0		23.0
Change Period, *(Y+Rc)*, s		5.8		5.8		5.4		5.4
Max Allow Headway *(MAH)*, s		4.2		4.2		2.7		2.7
Queue Clearance Time *(g_s)*, s		19.2		15.0		16.9		15.5
Green Extension Time *(g_e)*, s		5.5		5.6		0.6		0.6
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate *(v)*, veh/h	77	216	213	118	556	52	19	79		150	227	
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	826	1881	1844	955	1792	1594	1172	1645		1341	1422	
Queue Service Time *(g_s)*, s	4.3	3.7	3.8	4.6	13.0	1.0	1.4	3.6		9.4	13.5	
Cycle Queue Clearance Time *(g_c)*, s	17.2	3.7	3.8	8.4	13.0	1.0	14.9	3.6		13.0	13.5	
Capacity *(c)*, veh/h	518	1271	1245	686	1211	1077	135	326		293	282	
Volume-to-Capacity Ratio *(X)*	0.149	0.170	0.171	0.172	0.459	0.048	0.141	0.242		0.513	0.804	
Available Capacity *(c_a)*, veh/h	518	1271	1245	686	1211	1077	364	648		555	560	
Back of Queue *(Q)*, veh/ln (50th percentile)	0.8	1.2	1.2	0.8	3.7	0.2	0.4	1.4		3.0	4.6	
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Storage Ratio *(RQ)* (50th percentile)	0.19	0.10	0.10	0.10	0.08	0.01	0.06	0.18		0.26	0.42	
Uniform Delay *(d_1)*, s/veh	10.8	5.3	5.3	6.8	6.8	4.8	41.1	30.0		35.5	34.0	
Incremental Delay *(d_2)*, s/veh	0.6	0.3	0.3	0.1	0.3	0.0	0.2	0.1		0.5	2.1	
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay *(d)*, s/veh	11.4	5.6	5.6	6.9	7.1	4.9	41.3	30.1		36.0	36.0	
Level of Service (LOS)	B	A	A	A	A	A	D	C		D	D	
Approach Delay, s/veh / LOS	6.5	A		6.9	A		32.3	C		36.0	D	
Intersection Delay, s/veh / LOS	14.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Proposed 2016 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	77	405	24	118	556	52	19	11	68	150	48	179

Signal Information			
Cycle, s	88.8	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	17.6	60.0	0.0	0.0	0.0	0.0	1 2 3 4
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	5 6 7 8
Red	1.5	1.5	0.0	0.0	0.0	0.0	

	EB			WB			NB			SB		
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.980	0.943	0.990	1.000	1.000	1.000	1.000	0.855	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.980			0.000			0.866			0.876	
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (*s*), veh/h		3519			1792			229			301	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (*P*)												
Incremental Delay Factor (*k*)	0.50	0.50	0.50	0.11	0.11	0.11	0.04	0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.8		5.8		5.4		5.4
Green Ratio (*g/C*)		0.68		0.68		0.20		0.20
Permitted Saturation Flow Rate (s_p), veh/h/ln		826		955		1172		1341
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		60.0		60.0		17.6		17.6
Permitted Service Time (g_u), s		47.1		56.2		4.1		14.0
Permitted Queue Service Time (g_{ps}), s		4.3		4.6		1.4		9.4
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v								
Pedestrian F_s / F_{delay}								
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b								
Bicycle F_w / F_v								

--- Messages ---

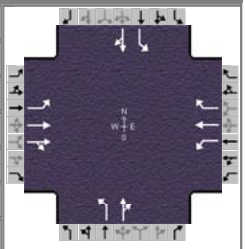
No errors or warnings exist.

--- Comments ---

Appendix E – HCS 2010 Capacity Analysis for Year 2036

HCS 2010 Signalized Intersection Input Data

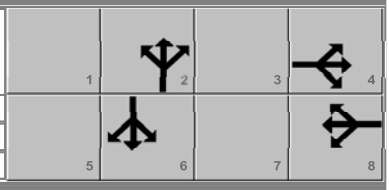
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Existing 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	203	833	6	37	308	71	2	11	97	91	5	44

Signal Information			
Cycle, s	84.3	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	13.1	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



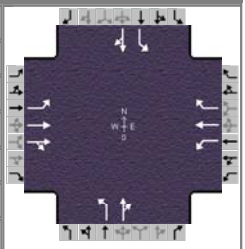
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	203	833	6	37	308	71	2	11	97	91	5	44
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		2	6	1	0	0		0	17	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	100	310		200	1150	750	160	195		290	313	
Grade (P_g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	45	45	45	45	45	45	35	35	35	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		60.0		60.0		30.0		30.0
Yellow Change Interval (*Y*), s	4.0	4.3	4.0	4.3	4.0	3.9	4.0	3.9
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	5	10	5	10	5	7	5	7
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	3.0	2.0	3.0	2.0	1.5	2.0	1.5
Recall Mode	Min	Max	Min	Max	Min	Min	Min	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

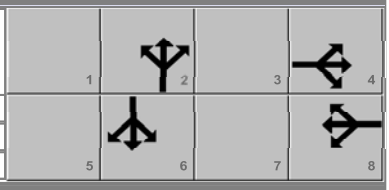
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Existing 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	203	833	6	37	308	71	2	11	97	91	5	44

Signal Information												
Cycle, s	84.3	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	13.1	60.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.9	4.3	0.0	0.0	0.0	0.0		
				Red	1.5	1.5	0.0	0.0	0.0	0.0		



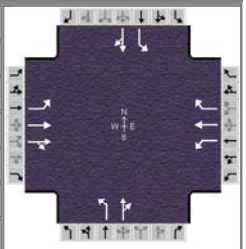
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		5.0		6.0		6.0
Phase Duration, s		65.8		65.8		18.5		18.5
Change Period, *(Y+Rc)*, s		5.8		5.8		5.4		5.4
Max Allow Headway *(MAH)*, s		4.2		4.2		2.8		2.8
Queue Clearance Time *(g_s)*, s		14.4		10.9		7.0		12.7
Green Extension Time *(g_e)*, s		6.8		6.8		0.3		0.3
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.01		0.01		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate *(v)*, veh/h	203	420	419	37	308	71	2	108		91	49	
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1020	1881	1876	653	1792	1594	1378	1636		1306	1398	
Queue Service Time *(g_s)*, s	7.3	7.0	7.0	1.9	5.1	1.1	0.1	5.0		5.7	2.6	
Cycle Queue Clearance Time *(g_c)*, s	12.4	7.0	7.0	8.9	5.1	1.1	2.6	5.0		10.7	2.6	
Capacity *(c)*, veh/h	749	1338	1335	495	1275	1134	259	255		212	218	
Volume-to-Capacity Ratio *(X)*	0.271	0.314	0.314	0.075	0.242	0.063	0.008	0.423		0.429	0.225	
Available Capacity *(c_a)*, veh/h	749	1338	1335	495	1275	1134	534	582		473	497	
Back of Queue *(Q)*, veh/ln (50th percentile)	1.4	2.0	2.0	0.2	1.3	0.3	0.0	2.0		1.8	0.8	
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Storage Ratio *(RQ)* (50th percentile)	0.34	0.16	0.16	0.03	0.03	0.01	0.01	0.25		0.15	0.08	
Uniform Delay *(d_1)*, s/veh	6.4	4.5	4.5	6.2	4.2	3.7	32.3	32.2		37.0	31.1	
Incremental Delay *(d_2)*, s/veh	0.9	0.6	0.6	0.3	0.4	0.1	0.0	0.4		0.5	0.2	
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay *(d)*, s/veh	7.3	5.1	5.1	6.5	4.7	3.8	32.3	32.6		37.5	31.3	
Level of Service (LOS)	A	A	A	A	A	A	C	C		D	C	
Approach Delay, s/veh / LOS	5.6	A		4.7	A		32.6	C		35.3	D	
Intersection Delay, s/veh / LOS	9.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

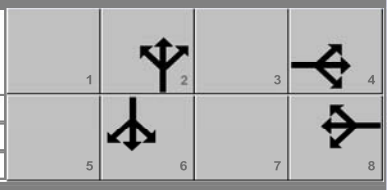
HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Existing 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	203	833	6	37	308	71	2	11	97	91	5	44

Signal Information												
Cycle, s	84.3	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	13.1	60.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.9	4.3	0.0	0.0	0.0	0.0		
				Red	1.5	1.5	0.0	0.0	0.0	0.0		



Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.980	0.943	0.990	1.000	1.000	1.000	1.000	0.855	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.997			0.000			0.861			0.861	
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (*s*), veh/h		3731			1792			167			143	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (*P*)												
Incremental Delay Factor (*k*)	0.50	0.50	0.50	0.50	0.50	0.50	0.04	0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.8		5.8		5.4		5.4
Green Ratio (*g/C*)		0.71		0.71		0.16		0.16
Permitted Saturation Flow Rate (s_p), veh/h/ln		1020		653		1378		1306
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		60.0		60.0		13.2		13.2
Permitted Service Time (g_u), s		54.9		53.0		10.6		8.2
Permitted Queue Service Time (g_{ps}), s		7.3		1.9		0.1		5.7
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v								
Pedestrian F_s / F_{delay}								
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b								
Bicycle F_w / F_v								

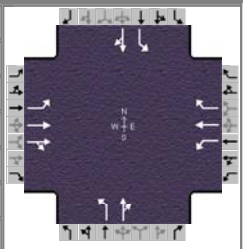
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS 2010 Signalized Intersection Input Data

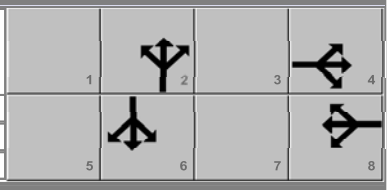
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Proposed 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	203	833	8	51	308	71	3	12	113	91	6	44

Signal Information			
Cycle, s	85.3	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	14.1	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



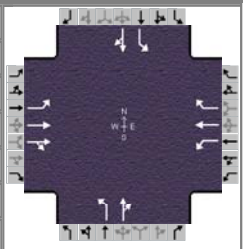
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	203	833	8	51	308	71	3	12	113	91	6	44
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		2	6	1	0	0		0	17	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	100	310		200	1150	750	160	195		290	313	
Grade (P_g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	45	45	45	45	45	45	35	35	35	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		60.0		60.0		30.0		30.0
Yellow Change Interval (*Y*), s	4.0	4.3	4.0	4.3	4.0	3.9	4.0	3.9
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	5	10	5	10	5	7	5	7
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	3.0	2.0	3.0	2.0	1.5	2.0	1.5
Recall Mode	Min	Max	Min	Max	Min	Min	Min	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

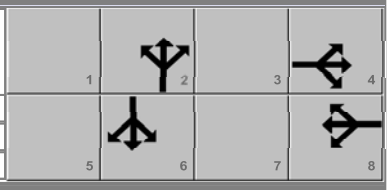
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Proposed 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	203	833	8	51	308	71	3	12	113	91	6	44

Signal Information												
Cycle, s	85.3	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	14.1	60.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.9	4.3	0.0	0.0	0.0	0.0		
				Red	1.5	1.5	0.0	0.0	0.0	0.0		



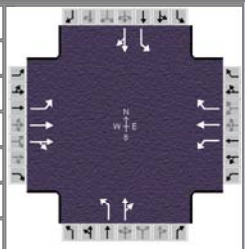
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		5.0		6.0		6.0
Phase Duration, s		65.8		65.8		19.5		19.5
Change Period, *(Y+Rc)*, s		5.8		5.8		5.4		5.4
Max Allow Headway *(MAH)*, s		4.2		4.2		2.8		2.8
Queue Clearance Time *(gs)*, s		14.9		12.1		7.9		13.7
Green Extension Time *(ge)*, s		7.0		7.0		0.4		0.3
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.01		0.01		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate *(v)*, veh/h	203	421	420	51	308	71	3	125		91	50	
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1020	1881	1875	651	1792	1594	1376	1634		1286	1402	
Queue Service Time *(gs)*, s	7.6	7.3	7.3	2.8	5.3	1.2	0.2	5.9		5.9	2.6	
Cycle Queue Clearance Time *(gc)*, s	12.9	7.3	7.3	10.1	5.3	1.2	2.7	5.9		11.7	2.6	
Capacity *(c)*, veh/h	738	1322	1317	486	1259	1120	272	272		210	233	
Volume-to-Capacity Ratio *(X)*	0.275	0.319	0.319	0.105	0.245	0.063	0.011	0.460		0.433	0.215	
Available Capacity *(ca)*, veh/h	738	1322	1317	486	1259	1120	526	574		448	492	
Back of Queue *(Q)*, veh/ln (50th percentile)	1.4	2.1	2.1	0.4	1.5	0.3	0.1	2.3		1.8	0.9	
Overflow Queue *(Q3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Storage Ratio *(RQ)* (50th percentile)	0.36	0.17	0.17	0.05	0.03	0.01	0.01	0.29		0.16	0.08	
Uniform Delay *(d1)*, s/veh	6.9	4.9	4.9	6.8	4.6	4.0	31.9	32.1		37.4	30.8	
Incremental Delay *(d2)*, s/veh	0.9	0.6	0.6	0.4	0.5	0.1	0.0	0.5		0.5	0.2	
Initial Queue Delay *(d3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay *(d)*, s/veh	7.8	5.5	5.5	7.3	5.0	4.1	31.9	32.6		37.9	30.9	
Level of Service (LOS)	A	A	A	A	A	A	C	C		D	C	
Approach Delay, s/veh / LOS	6.0	A		5.1	A		32.6	C		35.4	D	
Intersection Delay, s/veh / LOS	10.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS 2010 Signalized Intersection Intermediate Values

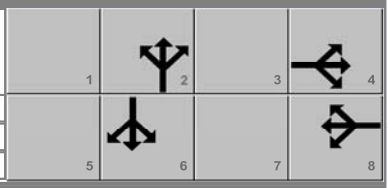
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	AM Proposed 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	203	833	8	51	308	71	3	12	113	91	6	44

Signal Information			
Cycle, s	85.3	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	14.1	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



	EB			WB			NB			SB		
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.980	0.943	0.990	1.000	1.000	1.000	1.000	0.855	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.997			0.000			0.860			0.863	
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (*s*), veh/h		3720			1792			157			168	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (*P*)												
Incremental Delay Factor (*k*)	0.50	0.50	0.50	0.50	0.50	0.50	0.04	0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.8		5.8		5.4		5.4
Green Ratio (*g/C*)		0.70		0.70		0.17		0.17
Permitted Saturation Flow Rate (s_p), veh/h/ln		1020		651		1376		1286
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		60.0		60.0		14.2		14.2
Permitted Service Time (g_u), s		54.7		52.6		11.6		8.4
Permitted Queue Service Time (g_{ps}), s		7.6		2.8		0.2		5.9
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v								
Pedestrian F_s / F_{delay}								
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b								
Bicycle F_w / F_v								

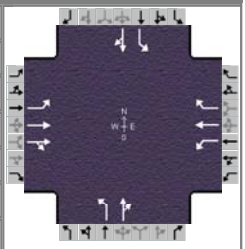
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS 2010 Signalized Intersection Input Data

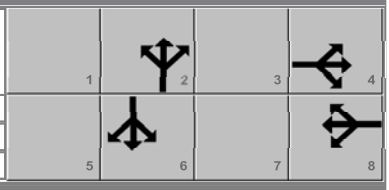
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Existing 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	94	494	24	118	679	64	14	12	52	183	48	218

Signal Information			
Cycle, s	91.4	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	20.2	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



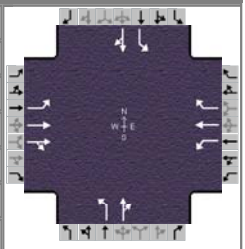
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	94	494	24	118	679	64	14	12	52	183	48	218
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		2	6	1	0	0		0	17	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	100	310		200	1150	750	160	195		290	313	
Grade (P_g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	45	45	45	45	45	45	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		60.0		60.0		30.0		30.0
Yellow Change Interval (*Y*), s	4.0	4.3	4.0	4.3	4.0	3.9	4.0	3.9
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	5	10	5	10	5	7	5	7
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	3.0	2.0	3.0	2.0	1.5	2.0	1.5
Recall Mode	Min	Max	Min	Max	Min	Min	Min	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Results Summary

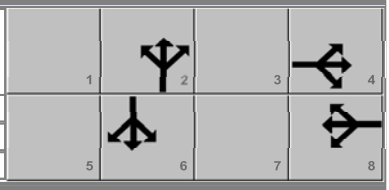
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Existing 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	94	494	24	118	679	64	14	12	52	183	48	218

Signal Information			
Cycle, s	91.4	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	20.2	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



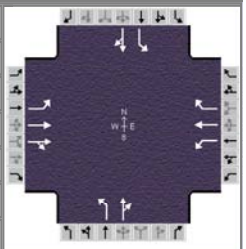
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		5.0		6.0		6.0
Phase Duration, s		65.8		65.8		25.6		25.6
Change Period, *(Y+Rc)*, s		5.8		5.8		5.4		5.4
Max Allow Headway *(MAH)*, s		4.2		4.2		2.8		2.8
Queue Clearance Time *(g_s)*, s		28.7		21.2		19.6		18.5
Green Extension Time *(g_e)*, s		7.2		7.4		0.6		0.6
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.06		0.03		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate *(v)*, veh/h	94	261	257	118	679	64	14	64		183	266	
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	728	1881	1850	880	1792	1594	1131	1658		1359	1415	
Queue Service Time *(g_s)*, s	7.5	5.1	5.1	5.7	19.2	1.3	1.1	2.9		11.5	16.5	
Cycle Queue Clearance Time *(g_c)*, s	26.7	5.1	5.1	10.7	19.2	1.3	17.6	2.9		14.4	16.5	
Capacity *(c)*, veh/h	404	1234	1214	607	1176	1046	125	367		337	314	
Volume-to-Capacity Ratio *(X)*	0.233	0.211	0.212	0.194	0.577	0.061	0.112	0.174		0.543	0.848	
Available Capacity *(c_a)*, veh/h	404	1234	1214	607	1176	1046	246	544		482	464	
Back of Queue *(Q)*, veh/ln (50th percentile)	1.3	1.7	1.7	1.0	6.3	0.4	0.3	1.1		3.7	6.0	
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Storage Ratio *(RQ)* (50th percentile)	0.32	0.14	0.14	0.13	0.14	0.01	0.05	0.14		0.32	0.55	
Uniform Delay *(d_1)*, s/veh	16.1	6.3	6.3	8.4	8.7	5.6	42.6	28.8		34.7	34.1	
Incremental Delay *(d_2)*, s/veh	1.3	0.4	0.4	0.7	2.1	0.1	0.1	0.1		0.5	6.3	
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay *(d)*, s/veh	17.4	6.7	6.7	9.1	10.8	5.7	42.7	28.9		35.2	40.4	
Level of Service (LOS)	B	A	A	A	B	A	D	C		D	D	
Approach Delay, s/veh / LOS	8.3	A		10.2	B		31.4	C		38.3	D	
Intersection Delay, s/veh / LOS	16.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS 2010 Signalized Intersection Intermediate Values

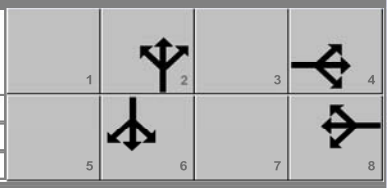
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Existing 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	94	494	24	118	679	64	14	12	52	183	48	218

Signal Information			
Cycle, s	91.4	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	20.2	60.0	0.0	0.0	0.0	0.0						
Yellow	3.9	4.3	0.0	0.0	0.0	0.0						
Red	1.5	1.5	0.0	0.0	0.0	0.0						



	EB			WB			NB			SB		
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.990	1.000	0.980	0.943	0.990	1.000	1.000	1.000	1.000	0.855	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.983			0.000			0.872			0.871	
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (*s*), veh/h		3560			1792			311			255	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (*P*)												
Incremental Delay Factor (*k*)	0.50	0.50	0.50	0.50	0.50	0.50	0.04	0.04		0.04	0.11	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.8		5.8		5.4		5.4
Green Ratio (*g/C*)		0.66		0.66		0.22		0.22
Permitted Saturation Flow Rate (s_p), veh/h/ln		728		880		1131		1359
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		60.0		60.0		20.3		20.3
Permitted Service Time (g_u), s		40.8		54.9		3.8		17.4
Permitted Queue Service Time (g_{ps}), s		7.5		5.7		1.1		11.5
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v								
Pedestrian F_s / F_{delay}								
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b								
Bicycle F_w / F_v								

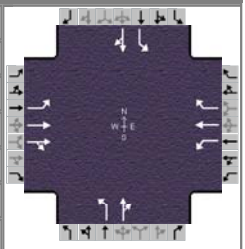
--- Messages ---

No errors or warnings exist.

--- Comments ---

HCS 2010 Signalized Intersection Input Data

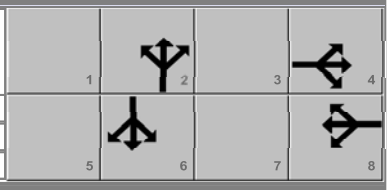
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Proposed 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	94	494	28	139	679	64	21	13	77	183	56	218

Signal Information			
Cycle, s	90.2	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	19.0	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



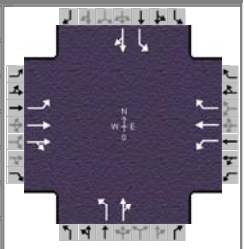
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	94	494	28	139	679	64	21	13	77	183	56	218
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0	0	0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	100	310		200	1150	750	160	195		290	313	
Grade (P_g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	45	45	45	45	45	45	35	35	35	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		60.0		60.0		35.0		35.0
Yellow Change Interval (*Y*), s	4.0	4.3	4.0	4.3	4.0	3.9	4.0	3.9
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	5	10	5	10	5	7	5	7
Start-Up Lost Time (l_t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.0	3.0	2.0	3.0	2.0	1.5	2.0	1.5
Recall Mode	Min	Max	Min	Max	Min	Min	Min	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS 2010 Signalized Intersection Results Summary

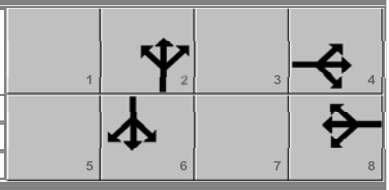
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Proposed 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	94	494	28	139	679	64	21	13	77	183	56	218

Signal Information			
Cycle, s	90.2	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	19.0	60.0	0.0	0.0	0.0	0.0	
Yellow	3.9	4.3	0.0	0.0	0.0	0.0	
Red	1.5	1.5	0.0	0.0	0.0	0.0	



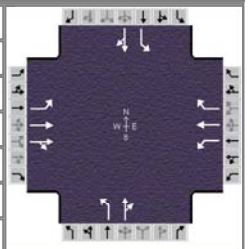
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		5.0		6.0		6.0
Phase Duration, s		65.8		65.8		24.4		24.4
Change Period, *(Y+Rc)*, s		5.8		5.8		5.4		5.4
Max Allow Headway *(MAH)*, s		4.2		4.2		2.8		2.8
Queue Clearance Time *(g_s)*, s		25.8		18.8		17.7		18.2
Green Extension Time *(g_e)*, s		7.5		7.6		0.7		0.7
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.05		0.02		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate *(v)*, veh/h	94	263	259	139	679	64	21	90		183	274	
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	728	1900	1864	894	1900	1610	1123	1646		1327	1662	
Queue Service Time *(g_s)*, s	7.0	4.9	4.9	6.5	16.8	1.3	1.6	4.1		12.0	14.1	
Cycle Queue Clearance Time *(g_c)*, s	23.8	4.9	4.9	11.3	16.8	1.3	15.7	4.1		16.2	14.1	
Capacity *(c)*, veh/h	428	1263	1239	626	1263	1071	142	347		299	351	
Volume-to-Capacity Ratio *(X)*	0.220	0.208	0.209	0.222	0.537	0.060	0.148	0.259		0.611	0.781	
Available Capacity *(c_a)*, veh/h	428	1263	1239	626	1263	1071	340	639		534	645	
Back of Queue *(Q)*, veh/ln (50th percentile)	1.2	1.6	1.6	1.2	5.7	0.4	0.4	1.6		3.8	5.5	
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Queue Storage Ratio *(RQ)* (50th percentile)	0.29	0.13	0.13	0.15	0.12	0.01	0.07	0.21		0.33	0.44	
Uniform Delay *(d_1)*, s/veh	14.1	5.9	5.9	8.1	7.9	5.3	41.0	29.7		36.5	33.6	
Incremental Delay *(d_2)*, s/veh	1.2	0.4	0.4	0.8	1.6	0.1	0.2	0.1		0.8	1.4	
Initial Queue Delay *(d_3)*, s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay *(d)*, s/veh	15.3	6.3	6.3	8.9	9.5	5.4	41.2	29.9		37.2	35.1	
Level of Service (LOS)	B	A	A	A	A	A	D	C		D	D	
Approach Delay, s/veh / LOS	7.6	A		9.1	A		32.0	C		35.9	D	
Intersection Delay, s/veh / LOS	15.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS 2010 Signalized Intersection Intermediate Values

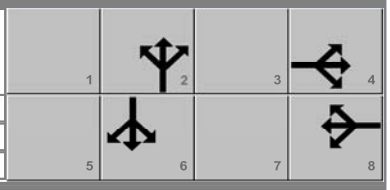
General Information				Intersection Information	
Agency	Infrastructure Engineering, Inc.			Duration, h	0.25
Analyst	Jane Canada	Analysis Date	1/11/2016	Area Type	Other
Jurisdiction		Time Period		PHF	1.00
Intersection	SR 46 & Westwood Boulev	Analysis Year	2016	Analysis Period	1> 7:00
File Name	PM Proposed 2036 - Ricker's @ SR 46 & Westwood Boulevard - Columbus, IN.xus				
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	94	494	28	139	679	64	21	13	77	183	56	218

Signal Information			
Cycle, s	90.2	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	19.0	60.0	0.0	0.0	0.0	0.0						
Yellow	3.9	4.3	0.0	0.0	0.0	0.0						
Red	1.5	1.5	0.0	0.0	0.0	0.0						



Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.981			0.000			0.867			0.875	
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (*s*), veh/h		3564			1900			238			340	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (*P*)												
Incremental Delay Factor (*k*)	0.50	0.50	0.50	0.50	0.50	0.50	0.04	0.04		0.04	0.04	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.8		5.8		5.4		5.4
Green Ratio (*g/C*)		0.67		0.67		0.21		0.21
Permitted Saturation Flow Rate (s_p), veh/h/ln		728		894		1123		1327
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		60.0		60.0		19.0		19.0
Permitted Service Time (g_u), s		43.2		55.1		5.0		14.9
Permitted Queue Service Time (g_{ps}), s		7.0		6.5		1.6		12.0
Time to First Blockage (g_f), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v								
Pedestrian F_s / F_{delay}								
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b								
Bicycle F_w / F_v								

--- Messages ---

No errors or warnings exist.

--- Comments ---

Appendix F – INDOT Signal Timing

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Configuration

Controller Sequence Priority

	1	2	3	4	5	6	7	8	9	10	11	12
Ring 1 Phases	1	2	3	4	9	10	0	0	0	0	0	0
Ring 2 Phases	5	6	7	8	11	12	0	0	0	0	0	0

Phase

	1	2	3	4	5	6	7	8	9	10	11	12
In Use	.	X	.	X	.	X	.	X	.	.	.	.
Exclusive Ped	.	.	.	.	.	.	.	.	.	.	.	.
Direction												

Overlap

	A	B	C	D
Direction				

Load Switch Channel/Driver Group Assign (Info Only):

Load Switch (MMU) Channel	Signal Driver Phase/ Ovlap	Group Ped
1	1	.
2	2	.
3	3	.
4	4	.
5	5	.
6	6	.
7	7	.
8	8	.
9	9	.
10	10	.
11	11	.
12	12	.
13	A	.
14	B	.
15	C	.
16	D	.

Configuration Continued

	Enable BIU: 1	2	3	4	5	6	7	8
Terminal/Facilities. . . .	X	.	.	.	.	.	.	.
Detector Rack.	X	.	.	.	.	.	.	.

Type 2 Runs as Type 1. . . .
MMU Disable. . . . . .
Diagnostic Enable. . . . . .
Peer-Peer Comm Enable. . . .

	1	2	3	4	5	6	7	8	9	10
Peer To Peer Addresses . .	255	255	255	255	255	255	255	255	255	255

Port 2:

Port 2 Protocol . . . . . Terminal
Port 2 Enable . . . . . YES
AB3418 Address. 0
AB3418 Group Address. 0
AB3418 Response Delay 0
AB3418 Single Flag Enable . . . NO
AB3418 Drop-Out Time. 0
AB3418 TOD SF Select. 0
Data Rate . . . . . 1200 bps
Data, Parity, Stop. 8, 0, 1

Port 3:

Port 3 Protocol . . . . . Telemetry
Port 3 Enable . . . . . NO
Telemetry Address 0
System Detector 9-16 Address. . 0
Telemetry Response Delay. . . . 2000
AB3418 Address. 0
AB3418 Group Address. 0
AB3418 Response Delay 0
AB3418 Single Flag Enable . . . NO
AB3418 Drop-Out Time. 0
AB3418 TOD SF Select. 0
Duplex. . . . . Full
Data Rate . . . . . 9600 bps
Data, Parity, Stop. 8, 0, 1

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Configuration Continued

Event Enabling		Alarm Enabling	
Critical RFE'S (MMU/TF)	X	ALARM 1	X
Non-Critical RFE'S (DET/TEST)	X	ALARM 2	
Detector Errors	X	ALARM 3	
Coordination Errors	X	ALARM 4	
MMU Flash Faults.	X	ALARM 5	
Local Flash Faults.	X	ALARM 6	
Preempt	X	ALARM 7	
Power On/Off.	X	ALARM 8	
Low Battery	X	ALARM 9	
		ALARM 10.	
		ALARM 11.	
		ALARM 12.	
		ALARM 13.	
		ALARM 14.	
		ALARM 15.	
		ALARM 16.	

Supervisor Access Code. . . ****
Data Change Access Code . . ****

MMU Compatibility Program (Info Only)

Channel Is Allowed to Time With Channel

Channel	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	X	.	.	.	
3	.	.	.	.	.	.	.	.	.	.	.	.	.		
4	.	.	.	.	.	.	.	.	X	.	.	.			
5	.	.	.	.	.	.	.	.	.	.	.				
6	.	.	.	.	.	.	.	.	.	.					
7	.	.	.	.	.	.	.	.	.						
8	.	.	.	.	.	.	.	.							
9	.	.	.	.	.	.	.								
10	.	.	.	.	.	.									
11	.	.	.	.	.										
12	.	.	.	.											
13	.	.	.												
14	.	.													
15	.														

Version Info:

Software Assy.	Part No.	Version
Boot	27831	2.83
Program	45561	7.9
Application		. 3
Help	27891	6.33
Configuration	27918	C000

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

By-Phase Timing Data

	Phase											
Direction	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Green	0	10	0	7	0	10	0	7	0	0	0	0
Bike Min Green	0	0	0	0	0	0	0	0	0	0	0	0
Cond Serv Min Grn	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clearance	0	7	0	7	0	7	0	7	0	0	0	0
Veh Extension	0.0	5.0	0.0	3.0	0.0	5.0	0.0	3.0	0.0	0.0	0.0	0.0
Alt Veh Exten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Extension	0	0	0	0	0	0	0	0	0	0	0	0
Max 1	0	60	0	30	0	60	0	30	0	0	0	0
Max 2	0	60	0	30	0	60	0	30	0	0	0	0
Max 3	0	0	0	0	0	0	0	0	0	0	0	0
Det. Fail Max	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Change	3.0	4.3	3.0	3.9	3.0	4.3	3.0	3.9	3.0	3.0	3.0	3.0
Red Clearance	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5	0.0	0.0	0.0	0.0
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Act. B4 Init	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Actuation	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	0	30	0	0	0	30	0	0	0	0	0	0
Time B4 Reduction	0	15	0	9	0	15	0	9	0	0	0	0
Cars Waiting	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	15	0	9	0	15	0	9	0	0	0	0
Minimum Gap	0.0	3.0	0.0	1.5	0.0	3.0	0.0	1.5	0.0	0.0	0.0	0.0

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

No-Serve Phases

	Phase Cannot Serve With Phase										
Phase	12	11	10	9	8	7	6	5	4	3	2
1	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	
3	.	.	.	.	.	.	.	.	.		
4	.	.	.	.	.	.	.	.			
5	.	.	.	.	.	.	.				
6	.	.	.	.	.	.					
7	.	.	.	.	.						
8	.	.	.	.							
9	.	.	.								
10	.	.	.								
11	.	.	.								

Ped Carryover

Ped Start Phase	Carry Over Phase
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0

Vehicle/Ped Phase as Overlap

Ped Phase As Overlap
Consists of Ped Phases

Ped Ovlap Phase	1	2	3	4	5	6	7	8	9	10	11	12
1	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.	.	.	.	.	.
5	.	.	.	.	.	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.	.	.	.	.	.
7	.	.	.	.	.	.	.	.	.	.	.	.
8	.	.	.	.	.	.	.	.	.	.	.	.
9	.	.	.	.	.	.	.	.	.	.	.	.
10	.	.	.	.	.	.	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.	.	.	.	.	.

Veh Phase As Overlap
Consists of Veh Phases

Veh Ovlap Phase	1	2	3	4	5	6	7	8	9	10	11	12
1	X	.	.	.	.	.	.	.	.	.	.	.
2	.	X	.	.	.	.	.	.	.	.	.	.
3	.	.	X	.	.	.	.	.	.	.	.	.
4	.	.	.	X	.	.	.	.	.	.	.	.
5	.	.	.	.	X	.	.	.	.	.	.	.
6	.	.	.	.	.	X	.	.	.	.	.	.
7	.	.	.	.	.	.	X	.	.	.	.	.
8	.	.	.	.	.	.	.	X	.	.	.	.
9	.	.	.	.	.	.	.	.	X	.	.	.
10	.	.	.	.	.	.	.	.	.	X	.	.
11	.	.	.	.	.	.	.	.	.	.	X	.
12	.	.	.	.	.	.	.	.	.	.	.	X

Overlap Data

Overlap A	Phase: 1	2	3	4	5	6	7	8	9	10	11	12
Standard.	.	.	.	.	.	.	.	.	.	.	.	.
Protected	.	.	.	.	.	.	.	.	.	.	.	.
Permitted	.	.	.	.	.	.	.	.	.	.	.	.
Enable Lag.	.	.	.	.	.	.	.	.	.	.	.	.
Enable Lead	.	.	.	.	.	.	.	.	.	.	.	.
Spare	.	.	.	.	.	.	.	.	.	.	.	.

Advance Green Timer 0.0

	Green	Yellow	Red
Lag/Lead Timers	0.0	0.0	0.0

Overlap B	Phase: 1	2	3	4	5	6	7	8	9	10	11	12
Standard.	.	.	.	.	.	.	.	.	.	.	.	.
Protected	.	.	.	.	.	.	.	.	.	.	.	.
Permitted	.	.	.	.	.	.	.	.	.	.	.	.
Enable Lag.	.	.	.	.	.	.	.	.	.	.	.	.
Enable Lead	.	.	.	.	.	.	.	.	.	.	.	.
Spare	.	.	.	.	.	.	.	.	.	.	.	.

Advance Green Timer 0.0

	Green	Yellow	Red
Lag/Lead Timers	0.0	0.0	0.0

Overlap C	Phase: 1	2	3	4	5	6	7	8	9	10	11	12
Standard.	.	.	.	.	.	.	.	.	.	.	.	.
Protected	.	.	.	.	.	.	.	.	.	.	.	.
Permitted	.	.	.	.	.	.	.	.	.	.	.	.
Enable Lag.	.	.	.	.	.	.	.	.	.	.	.	.
Enable Lead	.	.	.	.	.	.	.	.	.	.	.	.
Spare	.	.	.	.	.	.	.	.	.	.	.	.

Advance Green Timer 0.0

	Green	Yellow	Red
Lag/Lead Timers	0.0	0.0	0.0

Overlap D	Phase: 1	2	3	4	5	6	7	8	9	10	11	12
Standard.	.	.	.	.	.	.	.	.	.	.	.	.
Protected	.	.	.	.	.	.	.	.	.	.	.	.
Permitted	.	.	.	.	.	.	.	.	.	.	.	.
Enable Lag.	.	.	.	.	.	.	.	.	.	.	.	.
Enable Lead	.	.	.	.	.	.	.	.	.	.	.	.
Spare	.	.	.	.	.	.	.	.	.	.	.	.

Advance Green Timer 0.0

	Green	Yellow	Red
Lag/Lead Timers	0.0	0.0	0.0

Power Start, Remote Flash

	Phase															
	1	2	3	4	5	6	7	8	9	10	11	12	Overlap			
													A	B	C	D
Power Start		X				X										
External Start		X				X										
Into Remote Flash		X				X										
Exit Remote Flash		X				X										
Remote Flash Yellow																
Flash Together																

Initialization Interval:

Power Start	Green
External Start	Green

Power Start All Red Time	6
Power Start Flash Time	5

Remote Flash Options:

Out of Flash Yellow	NO
Out of Flash All Red	NO
Minimum Recall	NO
Alternate Flash	NO
Flash Thru Load Switches	NO
Cycle Through Phases	NO

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Option Data

	Phase											
	1	2	3	4	5	6	7	8	9	10	11	12
Guaranteed Passage	.	.	.	.	.	.	.	.	.	.	.	.
Call To NonActuated 1	.	.	.	.	.	.	.	.	.	.	.	.
Call To NonActuated 2	.	.	.	.	.	.	.	.	.	.	.	.
Dual Entry	.	.	.	X	.	.	.	X	.	.	.	.
Conditional Service	.	.	.	.	.	.	.	.	.	.	.	.
Conditional Reservice	.	.	.	.	.	.	.	.	.	.	.	.
Actuated Rest in Walk	.	.	.	.	.	.	.	.	.	.	.	.
Flashing Walk	.	.	.	.	.	.	.	.	.	.	.	.

Enable Programmable Options

Dual Entry	ON	Backup Protection Group 1	OFF
Conditional Service	OFF	Backup Protection Group 2	OFF
Ped Clearance Protection	OFF	Backup Protection Group 3	OFF
Special Preempt Overlap Flash	OFF	Simultaneous Gap Group 1	ON
Cond Service Det Cross Switch	OFF	Simultaneous Gap Group 2	ON
Lock Detectors in Red Only	OFF	Simultaneous Gap Group 3	OFF

Five Section Left Turn Control

Phases:	5-2	7-4	1-6	3-8	11-10	9-12
Left Turn Head	.	.	.	.	.	.

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Recall Data, Dimming

	Phase											
	1	2	3	4	5	6	7	8	9	10	11	12
Locking Detector. . . .	.	X	.	.	.	X	.	.	.	.	.	.
Vehicle Recall.	.	X	.	.	.	X	.	.	.	.	.	.
Pedestrian Recall . . .	.	.	.	.	.	.	.	.	.	.	.	.
Recall To Max	.	.	.	.	.	.	.	.	.	.	.	.
Soft Recall	.	.	.	.	.	.	.	.	.	.	.	.
Don't Rest Here	.	.	.	.	.	.	.	.	.	.	.	.
Ped Dark if No Call . .	.	.	.	.	.	.	.	.	.	.	.	.

Dimming:

	Load Switch															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Green/Walk. . . .	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Yellow/Ped Clear.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Red/Don't Walk. .	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Detector Type/Timers

Det.	Locking Memory	Log Enable	Timers Extend	Timers Delay	Don't Reset Extend	Type
1	NO	NO	0.0	7	.	1 - Extend/Delay
2	NO	YES	0.0	7	.	1 - Extend/Delay
3	NO	NO	0.0	3	.	1 - Extend/Delay
4	NO	YES	0.0	3	.	1 - Extend/Delay
5	NO	YES	0.0	0	.	1 - Extend/Delay
6	NO	YES	0.0	0	.	1 - Extend/Delay
7	NO	NO	0.0	0	.	1 - Extend/Delay
8	NO	YES	0.0	0	.	1 - Extend/Delay
9	NO	NO	0.0	7	.	1 - Extend/Delay
10	NO	YES	0.0	7	.	1 - Extend/Delay
11	NO	NO	0.0	3	.	1 - Extend/Delay
12	NO	YES	0.0	3	.	1 - Extend/Delay
13	NO	NO	0.0	0	.	1 - Extend/Delay
14	NO	YES	0.0	0	.	1 - Extend/Delay
15	NO	YES	0.0	0	.	1 - Extend/Delay
16	NO	YES	0.0	0	.	1 - Extend/Delay
17	NO	NO	0.0	0	.	0 - Normal
18	NO	NO	0.0	0	.	0 - Normal
19	NO	NO	0.0	0	.	0 - Normal
20	NO	NO	0.0	0	.	0 - Normal
21	NO	NO	0.0	0	.	0 - Normal
22	NO	NO	0.0	0	.	0 - Normal
23	NO	NO	0.0	0	.	0 - Normal
24	NO	NO	0.0	0	.	0 - Normal
25	NO	NO	0.0	0	.	0 - Normal
26	NO	NO	0.0	0	.	0 - Normal
27	NO	NO	0.0	0	.	0 - Normal
28	NO	NO	0.0	0	.	0 - Normal
29	NO	NO	0.0	0	.	0 - Normal
30	NO	NO	0.0	0	.	0 - Normal
31	NO	NO	0.0	0	.	0 - Normal
32	NO	NO	0.0	0	.	0 - Normal

Detector Names

Det 1: Detector 1	Det 17: Detector 17
Det 2: Detector 2	Det 18: Detector 18
Det 3: Detector 3	Det 19: Detector 19
Det 4: Detector 4	Det 20: Detector 20
Det 5: Detector 5	Det 21: Detector 21
Det 6: Detector 6	Det 22: Detector 22
Det 7: Detector 7	Det 23: Detector 23
Det 8: Detector 8	Det 24: Detector 24
Det 9: Detector 9	Det 25: Detector 25
Det 10: Detector 10	Det 26: Detector 26
Det 11: Detector 11	Det 27: Detector 27
Det 12: Detector 12	Det 28: Detector 28
Det 13: Detector 13	Det 29: Detector 29
Det 14: Detector 14	Det 30: Detector 30
Det 15: Detector 15	Det 31: Detector 31
Det 16: Detector 16	Det 32: Detector 32

Detector Type/Timers

33	NO	NO	0.0	0	.	0 - Normal
34	NO	NO	0.0	0	.	0 - Normal
35	NO	NO	0.0	0	.	0 - Normal
36	NO	NO	0.0	0	.	0 - Normal
37	NO	NO	0.0	0	.	0 - Normal
38	NO	NO	0.0	0	.	0 - Normal
39	NO	NO	0.0	0	.	0 - Normal
40	NO	NO	0.0	0	.	0 - Normal
41	NO	NO	0.0	0	.	0 - Normal
42	NO	NO	0.0	0	.	0 - Normal
43	NO	NO	0.0	0	.	0 - Normal
44	NO	NO	0.0	0	.	0 - Normal
45	NO	NO	0.0	0	.	0 - Normal
46	NO	NO	0.0	0	.	0 - Normal
47	NO	NO	0.0	0	.	0 - Normal
48	NO	NO	0.0	0	.	0 - Normal
49	NO	NO	0.0	0	.	0 - Normal
50	NO	NO	0.0	0	.	0 - Normal
51	NO	NO	0.0	0	.	0 - Normal
52	NO	NO	0.0	0	.	0 - Normal
53	NO	NO	0.0	0	.	0 - Normal
54	NO	NO	0.0	0	.	0 - Normal
55	NO	NO	0.0	0	.	0 - Normal
56	NO	NO	0.0	0	.	0 - Normal
57	NO	NO	0.0	0	.	0 - Normal
58	NO	NO	0.0	0	.	0 - Normal
59	NO	NO	0.0	0	.	0 - Normal
60	NO	NO	0.0	0	.	0 - Normal
61	NO	NO	0.0	0	.	0 - Normal
62	NO	NO	0.0	0	.	0 - Normal
63	NO	NO	0.0	0	.	0 - Normal
64	NO	NO	0.0	0	.	0 - Normal

Detector Names

Det 33: Detector 33	Det 49: Detector 49
Det 34: Detector 34	Det 50: Detector 50
Det 35: Detector 35	Det 51: Detector 51
Det 36: Detector 36	Det 52: Detector 52
Det 37: Detector 37	Det 53: Detector 53
Det 38: Detector 38	Det 54: Detector 54
Det 39: Detector 39	Det 55: Detector 55
Det 40: Detector 40	Det 56: Detector 56
Det 41: Detector 41	Det 57: Detector 57
Det 42: Detector 42	Det 58: Detector 58
Det 43: Detector 43	Det 59: Detector 59
Det 44: Detector 44	Det 60: Detector 60
Det 45: Detector 45	Det 61: Detector 61
Det 46: Detector 46	Det 62: Detector 62
Det 47: Detector 47	Det 63: Detector 63
Det 48: Detector 48	Det 64: Detector 64

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Detector Phase Assignment

	Phase											
Det.	1	2	3	4	5	6	7	8	9	10	11	12
1	.	.	.	X	.	.	.	.	.	.	.	.
2	.	.	.	X	.	.	.	.	.	.	.	.
3	.	.	.	X	.	.	.	.	.	.	.	.
4	.	.	.	X	.	.	.	.	.	.	.	.
5	.	X	.	.	.	.	.	.	.	.	.	.
6	.	X	.	.	.	.	.	.	.	.	.	.
7	.	X	.	.	.	.	.	.	.	.	.	.
8	.	X	.	.	.	.	.	.	.	.	.	.
9	.	.	.	.	.	.	.	X	.	.	.	.
10	.	.	.	.	.	.	.	X	.	.	.	.
11	.	.	.	.	.	.	.	X	.	.	.	.
12	.	.	.	.	.	.	.	X	.	.	.	.
13	.	.	.	.	.	X	.	.	.	.	.	.
14	.	.	.	.	.	X	.	.	.	.	.	.
15	.	.	.	.	.	X	.	.	.	.	.	.
16	.	.	.	.	.	X	.	.	.	.	.	.
17	.	.	.	.	.	.	.	.	.	.	.	.
18	.	.	.	.	.	.	.	.	.	.	.	.
19	.	.	.	.	.	.	.	.	.	.	.	.
20	.	.	.	.	.	.	.	.	.	.	.	.
21	.	.	.	.	.	.	.	.	.	.	.	.
22	.	.	.	.	.	.	.	.	.	.	.	.
23	.	.	.	.	.	.	.	.	.	.	.	.
24	.	.	.	.	.	.	.	.	.	.	.	.
25	.	.	.	.	.	.	.	.	.	.	.	.
26	.	.	.	.	.	.	.	.	.	.	.	.
27	.	.	.	.	.	.	.	.	.	.	.	.
28	.	.	.	.	.	.	.	.	.	.	.	.
29	.	.	.	.	.	.	.	.	.	.	.	.
30	.	.	.	.	.	.	.	.	.	.	.	.
31	.	.	.	.	.	.	.	.	.	.	.	.
32	.	.	.	.	.	.	.	.	.	.	.	.

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Detector Cross Switching

	Phase											
Det.	1	2	3	4	5	6	7	8	9	10	11	12
1	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.	.	.	.	.	.
5	.	.	.	.	.	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.	.	.	.	.	.
7	.	.	.	.	.	.	.	.	.	.	.	.
8	.	.	.	.	.	.	.	.	.	.	.	.
9	.	.	.	.	.	.	.	.	.	.	.	.
10	.	.	.	.	.	.	.	.	.	.	.	.
11	.	.	.	.	.	.	.	.	.	.	.	.
12	.	.	.	.	.	.	.	.	.	.	.	.
13	.	.	.	.	.	.	.	.	.	.	.	.
14	.	.	.	.	.	.	.	.	.	.	.	.
15	.	.	.	.	.	.	.	.	.	.	.	.
16	.	.	.	.	.	.	.	.	.	.	.	.
17	.	.	.	.	.	.	.	.	.	.	.	.
18	.	.	.	.	.	.	.	.	.	.	.	.
19	.	.	.	.	.	.	.	.	.	.	.	.
20	.	.	.	.	.	.	.	.	.	.	.	.
21	.	.	.	.	.	.	.	.	.	.	.	.
22	.	.	.	.	.	.	.	.	.	.	.	.
23	.	.	.	.	.	.	.	.	.	.	.	.
24	.	.	.	.	.	.	.	.	.	.	.	.
25	.	.	.	.	.	.	.	.	.	.	.	.
26	.	.	.	.	.	.	.	.	.	.	.	.
27	.	.	.	.	.	.	.	.	.	.	.	.
28	.	.	.	.	.	.	.	.	.	.	.	.
29	.	.	.	.	.	.	.	.	.	.	.	.
30	.	.	.	.	.	.	.	.	.	.	.	.
31	.	.	.	.	.	.	.	.	.	.	.	.
32	.	.	.	.	.	.	.	.	.	.	.	.

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Detector Cross Switching

	Phase											
Det.	1	2	3	4	5	6	7	8	9	10	11	12
33	.	.	.	.	.	.	.	.	.	.	.	.
34	.	.	.	.	.	.	.	.	.	.	.	.
35	.	.	.	.	.	.	.	.	.	.	.	.
36	.	.	.	.	.	.	.	.	.	.	.	.
37	.	.	.	.	.	.	.	.	.	.	.	.
38	.	.	.	.	.	.	.	.	.	.	.	.
39	.	.	.	.	.	.	.	.	.	.	.	.
40	.	.	.	.	.	.	.	.	.	.	.	.
41	.	.	.	.	.	.	.	.	.	.	.	.
42	.	.	.	.	.	.	.	.	.	.	.	.
43	.	.	.	.	.	.	.	.	.	.	.	.
44	.	.	.	.	.	.	.	.	.	.	.	.
45	.	.	.	.	.	.	.	.	.	.	.	.
46	.	.	.	.	.	.	.	.	.	.	.	.
47	.	.	.	.	.	.	.	.	.	.	.	.
48	.	.	.	.	.	.	.	.	.	.	.	.
49	.	.	.	.	.	.	.	.	.	.	.	.
50	.	.	.	.	.	.	.	.	.	.	.	.
51	.	.	.	.	.	.	.	.	.	.	.	.
52	.	.	.	.	.	.	.	.	.	.	.	.
53	.	.	.	.	.	.	.	.	.	.	.	.
54	.	.	.	.	.	.	.	.	.	.	.	.
55	.	.	.	.	.	.	.	.	.	.	.	.
56	.	.	.	.	.	.	.	.	.	.	.	.
57	.	.	.	.	.	.	.	.	.	.	.	.
58	.	.	.	.	.	.	.	.	.	.	.	.
59	.	.	.	.	.	.	.	.	.	.	.	.
60	.	.	.	.	.	.	.	.	.	.	.	.
61	.	.	.	.	.	.	.	.	.	.	.	.
62	.	.	.	.	.	.	.	.	.	.	.	.
63	.	.	.	.	.	.	.	.	.	.	.	.
64	.	.	.	.	.	.	.	.	.	.	.	.

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Ped/SD Local Assign,Log Interval

	Phase Ped Detector											
	1	2	3	4	5	6	7	8	9	10	11	12
Is Ped Detector No. . . .	1	2	3	4	5	6	7	8	9	10	11	12

	*Local System Detector No.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Is Local Detector No. . .	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Detector Log Interval . . 0

*NOTE: System master designations cross referenced to local
system detector numbers are:
SDA1 = 1 & 9
SDA2 = 2 & 10
SDB1 = 3 & 11
SDB2 = 4 & 12
SDC1 = 5 & 13
SDC2 = 6 & 14
SDD1 = 7 & 15
SDD2 = 8 & 16

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Diagnostic Plans/Fail Action

		Detector														
Plan		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
*Fail Action		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		Detector															
Plan		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
*Fail Action		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*NOTE: 0 = No Action, 1 = Min Recall, 2 = Max Recall in Effect
3 = Detector Fail Max Tiime from By-Phase Timing Data

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Diagnostic Plans/Fail Action

	Detector															
Plan	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
1 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
*Fail Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Detector															
Plan	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
1 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8 Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaling	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
*Fail Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*NOTE: 0 = No Action, 1 = Min Recall, 2 = Max Recall in Effect
3 = Detector Fail Max Tiime from By-Phase Timing Data

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Ped Diagnostic Plans

Plan		1	2	3	4	5	6	7	8	9	10	11	12
1	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1
2	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1
3	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1
4	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1
5	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1
6	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1
7	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1
8	Diagnostic	0	0	0	0	0	0	0	0	0	0	0	0
	Scaling	1	1	1	1	1	1	1	1	1	1	1	1

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Detector Diagnostic Intervals

Diagnostic Number	*No-Activity Diagnostic Interval	*Max Presence Diagnostic Interval	Erratic Counts
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0
25	0	0	0
26	0	0	0
27	0	0	0
28	0	0	0
29	0	0	0
30	0	0	0
31	0	0	0
32	0	0	0

*NOTE: Scaling is specified in each detector diagnostic plan.

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Speed Detectors

	Local Speed Detector							
One Detector Speed:	1	2	3	4	5	6	7	8
Local Detector Number. . . .	0	0	0	0	0	0	0	0
Vehicle Length	0	0	0	0	0	0	0	0
Loop Length.	0	0	0	0	0	0	0	0
Two Detector Speed:								
Local Detector Number. . . .	0	0	0	0	0	0	0	0
Speed Trap Length.	0	0	0	0	0	0	0	0

	Local Speed Detector							
One Detector Speed:	9	10	11	12	13	14	15	16
Local Detector Number. . . .	0	0	0	0	0	0	0	0
Vehicle Length	0	0	0	0	0	0	0	0
Loop Length.	0	0	0	0	0	0	0	0
Two Detector Speed:								
Local Detector Number. . . .	0	0	0	0	0	0	0	0
Speed Trap Length.	0	0	0	0	0	0	0	0

Units. . . . . Inches

NOTE: Speed Detector 1 = STA, Speed Detector 2 = STB

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

Coordinator Manual Command and Options

Manual Enable . . . . . Pattern 0

Split Units . . . . . Percent OffsetUnits . . . . . Percent
Interconnect Format . PLAN Interconnect Source . NIC
Transition. . . . . SMOOTH Dwell Period. 0
Resync Count. 0

Actuated Coord Phase . . . . Actuated Walk Rest . . . .
Inhibit Max Timing . . . . . Max 2 Select . . . . . .
Floating Force Off . . . . . Multisync. . . . . .

Split Demand:	Call	Time	Cyc Count	Phase 1	2	3	4	5	6	7	8	9	10	11	12
Demand 1 . .		0	0	.	.	.	.	.	.	.	.	.	.	.	.
Demand 2 . .		0	0	.	.	.	.	.	.	.	.	.	.	.	.

	Phase 1	2	3	4	5	6	7	8	9	10	11	12
Auto Permissive Min Green .	0	0	0	0	0	0	0	0	0	0	0	0

	A	B	C	D	E	F
Free Alternate Sequence . .	.	.	.	.	.	.

Coordination Patterns

Preemptors

Preemptor 1

Active		Det Lock		Ped Dark	
Priority Preemption		Yel-Red To Grn		Ped Active	
Outputs Only During Hold		Flash All Outputs		Zero Ped Clr Time	
Terminate Overlap ASAP		Terminate Phases		Ped Clr Thru Yel	
Don't Override Flash		Duration Time	0		
Flash During Hold		Delay Time	0		
No CVM in Flash		Inhibit Time	0		
Fast Flash Grn on Hold Phase		Min Ped Clear	0		
Enable Max Time		Max Time	0		
		Exit Max	0		
		Min Hold Time	0		
		Hold Delay Time	0		

	Green	Yellow	Red
Minimum	0	0.0	0.0
Track Clear	0	0.0	0.0
Hold		0.0	0.0

Phase/Overlap	1	2	3	4	5	6	7	8	9	10	11	12/	A	B	C	D
Terminate Overlap																
Track Clearance Phase																
Hold Phases																
Exit Phases																
Exit Calls on Phase																

Out of Flash Color for Exit Phases . . . . Green

Preemptor 2

Active		Det Lock		Ped Dark	
Priority Preemption		Yel-Red To Grn		Ped Active	
Outputs Only During Hold		Flash All Outputs		Zero Ped Clr Time	
Terminate Overlap ASAP		Terminate Phases		Ped Clr Thru Yel	
Don't Override Flash		Duration Time	0		
Flash During Hold		Delay Time	0		
No CVM in Flash		Inhibit Time	0		
Fast Flash Grn on Hold Phase		Min Ped Clear	0		
Enable Max Time		Max Time	0		
		Exit Max	0		
		Min Hold Time	0		
		Hold Delay Time	0		

	Green	Yellow	Red
Minimum	0	0.0	0.0
Track Clear	0	0.0	0.0
Hold		0.0	0.0

Phase/Overlap	1	2	3	4	5	6	7	8	9	10	11	12/	A	B	C	D
Terminate Overlap																
Track Clearance Phase																
Hold Phases																
Exit Phases																
Exit Calls on Phase																

Out of Flash Color for Exit Phases . . . . Green
Linked Preemptor 0

Preemptors

Preemptor 3

Active		Det Lock	Ped Dark
Priority Preemption		Yel-Red To Grn	Ped Active
Outputs Only During Hold		Flash All Outputs	Zero Ped Clr Time
Terminate Overlap ASAP		Terminate Phases	Ped Clr Thru Yel
Don't Override Flash		Duration Time	0
Flash During Hold		Delay Time	0
No CVM in Flash		Inhibit Time	0
Fast Flash Grn on Hold Phase		Min Ped Clear	0
Enable Max Time		Max Time	0
		Exit Max	0
		Min Hold Time	0
		Hold Delay Time	0

	Green	Yellow	Red
Minimum	0	0.0	0.0
Track Clear	0	0.0	0.0
Hold		0.0	0.0

Phase/Overlap	1	2	3	4	5	6	7	8	9	10	11	12/	A	B	C	D
Terminate Overlap																
Track Clearance Phase																
Hold Phases																
Exit Phases																
Exit Calls on Phase																

Out of Flash Color for Exit Phases . . . . Green
Linked Preemptor 0

Preemptor 4

Active		Det Lock	Ped Dark
Priority Preemption		Yel-Red To Grn	Ped Active
Outputs Only During Hold		Flash All Outputs	Zero Ped Clr Time
Terminate Overlap ASAP		Terminate Phases	Ped Clr Thru Yel
Don't Override Flash		Duration Time	0
Flash During Hold		Delay Time	0
No CVM in Flash		Inhibit Time	0
Fast Flash Grn on Hold Phase		Min Ped Clear	0
Enable Max Time		Max Time	0
		Exit Max	0
		Min Hold Time	0
		Hold Delay Time	0

	Green	Yellow	Red
Minimum	0	0.0	0.0
Track Clear	0	0.0	0.0
Hold		0.0	0.0

Phase/Overlap	1	2	3	4	5	6	7	8	9	10	11	12/	A	B	C	D
Terminate Overlap																
Track Clearance Phase																
Hold Phases																
Exit Phases																
Exit Calls on Phase																

Out of Flash Color for Exit Phases . . . . Green
Linked Preemptor 0

Preemptors

Preemptor 5

Active	Det Lock	Ped Dark	
Priority Preemption	Yel-Red To Grn	Ped Active	
Outputs Only During Hold	Flash All Outputs	Zero Ped Clr Time	
Terminate Overlap ASAP	Terminate Phases	Ped Clr Thru Yel	
Don't Override Flash	Duration Time	0	
Flash During Hold	Delay Time	0	
No CVM in Flash	Inhibit Time	0	
Fast Flash Grn on Hold Phase	Min Ped Clear	0	
Enable Max Time	Max Time	0	
	Exit Max	0	
	Min Hold Time	0	
	Hold Delay Time	0	

	Green	Yellow	Red
Minimum	0	0.0	0.0
Track Clear	0	0.0	0.0
Hold		0.0	0.0

Phase/Overlap	1	2	3	4	5	6	7	8	9	10	11	12/	A	B	C	D
Terminate Overlap																
Track Clearance Phase																
Hold Phases																
Exit Phases																
Exit Calls on Phase																

Out of Flash Color for Exit Phases . . . . Green
Linked Preemptor 0

Preemptor 6

Active	Det Lock	Ped Dark	
Priority Preemption	Yel-Red To Grn	Ped Active	
Outputs Only During Hold	Flash All Outputs	Zero Ped Clr Time	
Terminate Overlap ASAP	Terminate Phases	Ped Clr Thru Yel	
Don't Override Flash	Duration Time	0	
Flash During Hold	Delay Time	0	
No CVM in Flash	Inhibit Time	0	
Fast Flash Grn on Hold Phase	Min Ped Clear	0	
Enable Max Time	Max Time	0	
	Exit Max	0	
	Min Hold Time	0	
	Hold Delay Time	0	

	Green	Yellow	Red
Minimum	0	0.0	0.0
Track Clear	0	0.0	0.0
Hold		0.0	0.0

Phase/Overlap	1	2	3	4	5	6	7	8	9	10	11	12/	A	B	C	D
Terminate Overlap																
Track Clearance Phase																
Hold Phases																
Exit Phases																
Exit Calls on Phase																

Out of Flash Color for Exit Phases . . . . Green
Linked Preemptor 0

Bus Preemptors

	Bus Preemptor 1	2	3	4
Preemptor Active	.	.	.	.
Detector Lock	.	.	.	.
Maximum Time	0	0	0	0
Reservice Time	0	0	0	0
Delay Time	0	0	0	0
Inhibit Time	0	0	0	0
Entrance Green	0	0	0	0
Entrance Ped Clearance	0	0	0	0
Entrance Yellow	0.0	0.0	0.0	0.0
Entrance Red	0.0	0.0	0.0	0.0
Minimum Hold Time	0	0	0	0

Hold Phases

	1	2	3	4	5	6	7	8	9	10	11	12
Preemptor 1	.	.	.	.	.	.	.	.	.	.	.	.
Preemptor 2	.	.	.	.	.	.	.	.	.	.	.	.
Preemptor 3	.	.	.	.	.	.	.	.	.	.	.	.
Preemptor 4	.	.	.	.	.	.	.	.	.	.	.	.

NIC/TOD Clock/Calendar

Manual NIC Program Step 0

Manual TOD Program Step 0

NIC Resync Time 0000

Sync Reference is . . . . . Reference Time

Week 1 Begins on 1st Sunday . . . . . NO If NO, then week containing Jan. 1

Disable Daylight Savings Time . . . . . NO

Daylight Savings
Begins Last Sunday in March . . . . . NO If NO, then Second Sunday as per 2007 DST Law

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

TOD Weekly/Yearly

Weekly Program Numbers

	1	2	3	4	5	6	7	8	9	10	
Sunday . . .	1	1	1	1	1	1	1	1	1	1	Program No.
Monday . . .	1	1	1	1	1	1	1	1	1	1	Program No.
Tuesday. . .	1	1	1	1	1	1	1	1	1	1	Program No.
Wednesday. .	1	1	1	1	1	1	1	1	1	1	Program No.
Thursday . .	1	1	1	1	1	1	1	1	1	1	Program No.
Friday . . .	1	1	1	1	1	1	1	1	1	1	Program No.
Saturday . .	1	1	1	1	1	1	1	1	1	1	Program No.

Week of Year

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Prog	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Prog	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Prog	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Holiday Programs

Holiday	Type	Month	Day of Week/ Day of Month	Week of Year/ Year	Program
1	Fixed	0	0	0	0
2	Fixed	0	0	0	0
3	Fixed	0	0	0	0
4	Fixed	0	0	0	0
5	Fixed	0	0	0	0
6	Fixed	0	0	0	0
7	Fixed	0	0	0	0
8	Fixed	0	0	0	0
9	Fixed	0	0	0	0
10	Fixed	0	0	0	0
11	Fixed	0	0	0	0
12	Fixed	0	0	0	0
13	Fixed	0	0	0	0
14	Fixed	0	0	0	0
15	Fixed	0	0	0	0
16	Fixed	0	0	0	0
17	Fixed	0	0	0	0
18	Fixed	0	0	0	0
19	Fixed	0	0	0	0
20	Fixed	0	0	0	0
21	Fixed	0	0	0	0
22	Fixed	0	0	0	0
23	Fixed	0	0	0	0
24	Fixed	0	0	0	0
25	Fixed	0	0	0	0
26	Fixed	0	0	0	0
27	Fixed	0	0	0	0
28	Fixed	0	0	0	0
29	Fixed	0	0	0	0
30	Fixed	0	0	0	0
31	Fixed	0	0	0	0
32	Fixed	0	0	0	0
33	Fixed	0	0	0	0
34	Fixed	0	0	0	0
35	Fixed	0	0	0	0
36	Fixed	0	0	0	0

Bartholomew County SR 46 @ 325 W 2/3/2016 10:04

NIC Program Steps

Step	Program	Step Begins	Pattern	Override